

```
FFFFFFFFFFF 11 5555555555 HH HH DDDDDDDDDDD SSSSSSSSSS 00000000 6666666666
FFFFFFFFFFF 111 5555555555 HH HH DDDDDDDDDDD SSSSSSSSSS 00000000 6666666666
FF 1111 55 55 HH HH DD DD SS SS 00 00 66
FF 11 55 55 HH HH DD DD SS SS 00 00 66
FF 11 55 55 HH HH DD DD SS SS 00 00 66
FFFFF 11 5555555555 HH HH DD DD SS SS 00 00 66
FFFFF 11 5555555555 HH HH DD DD SS SS 00 00 66
FF 11 55 55 HH HH DD DD SS SS 00 00 66
FF 11 55 55 HH HH DD DD SS SS 00 00 66
FF 11 55 55 HH HH DD DD SS SS 00 00 66
FF 111111111 5555555555 HH HH DD DD SS SS 00 00 66
FF 111111111 5555555555 HH HH DD DD SS SS 00 00 66
5555555555 HH HH DDDDDDDDDDD SSSSSSSSSS 00000000 6666666666
5555555555 HH HH DDDDDDDDDDD SSSSSSSSSS 00000000 6666666666
```

```
HH HH 00000000 5555555555
HH HH 0000000000 5555555555
HH HH 00 00 55
HH HH 00 00 55
HH HH 00 00 55
HH HH 00 00 55
HH HH 00 00 55
HH HH 00 00 55
HH HH 00 00 55
HH HH 00 00 55
HH HH 0000000000 5555555555
HH HH 00000000 5555555555
```

```
11 7777777777 3333333333
111 7777777777 3333333333
1111 77 77 33
11 77 33
11 77 33
11 77 33
11 77 33
11 77 33
111111111 77 33
111111111 77 3333333333
77 3333333333
```

```
HH HH 00000000 5555555555
HH HH 0000000000 5555555555
HH HH 00 00 55
HH HH 00 00 55
HH HH 00 00 55
HH HH 00 00 55
HH HH 00 00 55
HH HH 00 00 55
HH HH 00 00 55
HH HH 0000000000 5555555555
HH HH 00000000 5555555555
```

```
11 7777777777 3333333333
111 7777777777 3333333333
1111 77 77 33
11 77 33
11 77 33
11 77 33
11 77 33
11 77 33
111111111 77 33
111111111 77 3333333333
77 3333333333
```


[illegible]

```

22      IEF686J
23      IEF648J
IEF142I F15HDS06
IEF373I STEP /FO
IEF374I STEP /FO
IEF142I F15HDS06
IEF373I STEP /LKI
IEF374I STEP /LKI
IEF142I F15HDS06
IEF373I STEP /GO
IEF374I STEP /GO
IEF375I JOB /F1
IEF376I JOB /F1

```

Bei der Erstellung des Programms ist hinsichtlich der sog. Strangness S ein Programmierfehler unterlaufen, der sich jedoch nur bei dem baryonischen Ξ -Doublett bemerkbar macht. Bei richtiger Programmierung ergibt sich für dieses Doublett $S=-2$, was für die elektrischen Ladungsquantenzahlen der Doublettkomponenten $q_1=0$ und $q_2=-1$ bedingt. Im übrigen wäre zu bemerken, daß S nicht unmittelbar hinsichtlich des Massenspektrums relevant ist.

Im Computer-Ausdruck wurde diese Ξ -Doublett mit xi bezeichnet.

[illegible]

```

22      IEF6861 DDNAME REFERRED TO ON DDNAME KEYWORD IN PRIOR STEP WAS NOT RESOLVED
23      IEF6481 INVALID DISP FIELD- PASS SUBSTITUTED
IEF142I F15HDS06 FOR - STEP WAS EXECUTED - COND CODE 0000
IEF373I STEP /PORT / START 82223.0921
IEF374I STEP /PORT / STOP 82223.0922 CPU OMIN 00.86SEC SRB OMIN 00.04SEC VIRT 664K SYS 220K
IEF142I F15HDS06 LKED - STEP WAS EXECUTED - COND CODE 0000
IEF373I STEP /LKED / START 82223.0922
IEF374I STEP /LKED / STOP 82223.0922 CPU OMIN 00.39SEC SRB OMIN 00.12SEC VIRT 304K SYS 200K
IEF142I F15HDS06 GO - STEP WAS EXECUTED - COND CODE 0000
IEF373I STEP /GO / START 82223.0922
IEF374I STEP /GO / STOP 82223.0924 CPU OMIN 37.40SEC SRB OMIN 09.08SEC VIRT 72K SYS 204K
IEF375I JOB /F15HDS06/ START 82223.0921
IEF376I JOB /F15HDS06/ STOP 82223.0924 CPU OMIN 38.65SEC SRB OMIN 09.24SEC

```



```

      ISN 0028      ITEMP1=IQG*(IKAPPA+IBINOM(IPG,2))
      ISN 0029      IEPS=IEPS*(-1)**MOD(ITEMP1,2)
      C-----      (1-4)
      ISN 0030      ITEMP2=IQG*(IQG*(IK-1)+IBINOM(IPG,2))
      ISN 0031      IEPSQ=IEPS*(-1)**MOD(ITEMP2,2)
      C-----      (1-1)
      ISN 0032      ICS=2/(IK*(1+IKAPPA))*(IPG*IEPSP+IQG*IEPSQ)*(IK-1+IKAPPA)
      ISN 0033      CS=QFLOAT(ICS)
      C-----      DEFINE ISO MULTIPLETT COMPONENT
      ISN 0034      IXE=IPG+1
      ISN 0035      DO 2 IX=1,IXE

```

```

00002500
00002600
00002700
00002800
00002900
00003000
00003100
00003200
00003300
00003400
00003500
00003600

```

```

*VERSION 1.3.0 (01 MAY 80)      MAIN      SYSTEM/370 FORTRAN H EXTENDED (ENHANCED)      DATE 82.223/09.22.03      PAGE 2
      C-----      (1-5) F(X,PG,QG,KAPPA,EPS) INTEGER
      ISN 0036      X=QFLOAT(IX)
      ISN 0037      IQX=((IPG+2-2*IX)*(1-IKAPPA*IQG*(2-IX))+ICS+IEPS*(IK-1-(1+IKAPPA))
      C-----      **IQG*(2-IX))/2
      ISN 0038      QX=QFLOAT(IQX)
      C-----      COMPUTE CHARGE KQ
      ISN 0039      IKQ=IABS(IQX)
      ISN 0040      KQ=QABS(QX)
      C-----      TEST PRINT
      ISN 0041      IF(IPRINT.GE.1) WRITE(6,101) IEPS,IEPSP,IEPSQ,ICS,IKQ,IX,IQX
      ISN 0043      101  FORMAT(1X,'=====')
      C-----      CALL GBASE
      ISN 0044      C-----      DEFINE EXCITATION LEVEL N
      ISN 0045      ILE=5
      ISN 0046      INIE=112
      ISN 0047      DO 3 INI=1,INIE
      ISN 0048      IN=INI-1
      ISN 0049      IF(IN.EQ.INIE-1) IN=ILE
      C-----      SKIP OVER N = 1, OTHERWISE FN BECOMES IMAGINARY
      C-----      HERE THE RESONANCE LIMIT 'ILE' CAN BE COMPUTED
      ISN 0051      IF(IN.EQ.1) GOTO 5
      ISN 0053      N=QFLOAT(IN)
      ISN 0054      WRITE(6,103)
      ISN 0055      103  FORMAT(1X,'-----')
      ISN 0056      IF(IPRINT.GE.2) WRITE(6,102) IN
      ISN 0058      102  FORMAT(1X,' N = ',I5)
      ISN 0059      CALL GSTRUC
      ISN 0060      CALL GMASS(AM)
      C-----      PRINT OUTPUT
      ISN 0061      WRITE(6,300) ICS,IKQ,IEPS,IQX,IN,AM
      ISN 0062      300  FORMAT(1H0,' CS KQ EPS QX N AM (MEV) '
      C-----      * / 1X,5IS,Q17.8)
      ISN 0063      GOTO 3
      C-----      COMPUTE THE RESONANCE LIMITS
      ISN 0064      5    IF((IQG*(2-IX)*(1-IKAPPA)).EQ.1) GOTO 8
      ISN 0066      IL1=IQINT((QFLOAT((2*(IPG+1))**((2-IX)*(IK+1)))/(4.Q0*ALF1)*
      C-----      *(KCH+FIG))**((1.Q0/3.Q0)-Q1)
      ISN 0067      A1=1.5Q0
      ISN 0068      A2=0.5Q0
      ISN 0069      A3=-3.Q0*ALF1/ALF2*(QFLOAT(IL1+IQ1)**3)
      ISN 0070      QA=(3.Q0*A2-A1**2)/9.Q0
      ISN 0071      RA=(9.Q0*A1*A2-27.Q0*A3-2.Q0*A1**3)/54.Q0
      ISN 0072      DA=QSQRT(QA**3+RA**2)
      ISN 0073      SA=(RA+DA)**(1.Q0/3.Q0)
      ISN 0074      TA=(RA-DA)**(1.Q0/3.Q0)
      ISN 0075      IL2=IQINT(SA+TA-A1/3.Q0-Q2)
      ISN 0076      IL3=IQINT(QSQRT(2.Q0*ALF2/ALF3*QFLOAT(IL2+IQ2)**2+0.25Q0)-0.5Q0
      C-----      *-Q3)
      ISN 0077      IL4=IQINT(ALF3*QFLOAT(IL3+IQ3)-Q4)
      ISN 0078      C-----      (7-2) DETERMINE MAXIMUM N = ILE
      ISN 0079      TEMP1=(ALF1*QFLOAT((IL1+IQ1)**3)+ALF2*QFLOAT((IL2+IQ2)**2)+
      C-----      *ALF3*QFLOAT(IL3+IQ3)+QEXP(QFLOAT((1-2*IK)*(IL4+IQ4))/(3.Q0*Q4)))/
      ISN 0080      *WGX-1.Q0
      ISN 0081      TEMP2=QFLOAT(1-IQG*(2-IX)*(1-IKAPPA))
      ISN 0082      DO 6 ILS=1,50000
      ISN 0084      ILT=ILS-1
      IF(ILT.EQ.1) GOTO 6
      LT=QFLOAT(ILT)

```

DATE 82.223/09.22.03

PAGE 2

```

00003700
00003800
00003900
00004000
00004100
00004200
00004300
00004400
00004500
00004600
00004700
00004800
00004900
00005000
00005010
00005020
00005100
00005200
00005201
00005203
00005204
00005210
00005300
00005310
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00005400
00005600
00005700
00005800
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00006000
00006100
00006200
00006210
00006220
00006221
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00006251
00006260
00006270
00006271
00006280
00006290
00006291
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00006294
00006295
00006296
00006298

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ISN 0002 C 17/03/82 208091701 MEMBER NAME GINIT (HEIMS) FORTRAN 00000000
ISN 0003 C----- SUBROUTINE GINIT 00000100
ISN 0004 C----- INITIALISIERT KONSTANTE GROESSEN IM COMMON /CONST/ 00000200
ISN 0005 C----- IMPLICIT REAL*16 (A-H,J-Z) 00000300
C----- COMMON /CONST/ PI,HQ,C,GAM,RG,SO,FAKMEV,ETA,THETA,EQ,ALFA,AMU, 00000400
C----- *ALFP,ALFM,XI,EBN,BETA,IPRINT 00000500
C----- COMMON /PARMAT/ A11,A12,A13,A14,A15,A16,A21,A22,A23,A24,A25,A26, 00000510
C----- *A31,A32,A33,A34,A35,A36,A41,A42,A43,A44,A45,A46, 00000520
C----- *A51,A52,A53,A54,A55,A56,A61,A62,A63,A64,A65,A66, 00000530
C----- PI=3.141592653590 00000600
C----- EBN=QEXP(1.00) 00000700
C----- HQ=1.05458870-34 00000800
C----- C=2.9979245808 00000900
C----- GAM=6.67320-11 00001000
C----- RG=376.7303765900 00001100
C----- SO=1.00 00001200
C----- FAKMEV=0.05609545Q31 00001300
C----- XI=1.6180339900 00001400
ISN 0015 C----- (2B,2-1) # CONST REAL 00001500
ISN 0016 C----- ETA=PI/(4.00*PI**4)**0.25Q0 REAL 00001600
ISN 0017 C----- (2A,2-2) # CONST 00001700
C----- THETA=5.00*ETA+2.00*QSQR(ETA)+1.00 00001800
C----- (2,2-5) F(CONST) 00001900
ISN 0018 C----- EQ=3.00/(4.00*PI**2)*QSQR(2.00*THETA*HQ/RG) 00002000
C----- (22) 00002100
ISN 0019 C----- ALFA=1.00/137.03602725Q0 00002200
C----- (2-6) 00002300
ISN 0020 C----- BETA=1.00/1.00001411Q0 00002400
C----- (3-1) 00002500
C----- AMU=PI**0.25Q0*(3.00*PI*SO*GAM*HQ)**(1.00/3.00)*QSQR(C*HQ/(3.00* 00002600
C----- *GAM)/(C*SO) 00002700
ISN 0021 C----- (3-3) # CONST REAL 00002800
ISN 0022 C----- TEMP1=1.00-2.00/3.00*XI*ETA**2*(1.00-QSQR(ETA)) 00002900
ISN 0023 C----- ALFP=TEMP1/(ETA**2*ETA**((1.00/3.00))-1.00 00003000
C----- ALFM=TEMP1/(ETA*ETA**((1.00/3.00))-1.00 00003100
ISN 0024 C----- SCHREIBE DIE KONSTANTEN AUS 00003200
ISN 0025 C----- WRITE(6,100) PI,EBN,HQ,C,GAM,RG,SO,FAKMEV,ETA,THETA,EQ,ALFA,BETA, 00003300
100 FORMAT(1X,'EINGEGEBENE KONSTANTEN: ',1X, 00003400
1X,PI, 00003500
1X,'BASIS OF NATURAL LOGARITHM: EBN =',F12.8, 00003600
1X,'PLANCK WIRKUNGSQUANTUM/(2*PI): HQ =',F12.8, 00003700
1X,'LICHTGESCHWINDIGKEIT: C =',Q14.8, (WS/S), 00003800
1X,'GRAVITATIONSKONSTANTE: GAM =',Q14.8, (M/S), 00003900
1X, 00004000
1X,'WELLENWIDERSTAND DES VAKUUMS: RG =',F14.8, (OHM), 00004100
1X,'EINHEITSTRECKE: SO =',F14.8, (M), 00004200
1X,'ABGELEITETE KONSTANTE: ',1X, 00004300
1X,'UMRECHNUNG KG - MEV: FAKMEV =',Q14.8, (MEV/KG), 00004400
1X,'ZAHLENFAKTOR: ETA =',Q14.8, 00004500
1X,'ZAHLENFAKTOR: THETA =',Q14.8, 00004600
1X,'ELEMENTARLADUNG: EQ =',Q14.8, 00004700
1X,'FEINSTRUKTURKONSTANTE: ALFA =',Q14.8, (A*S), 00004800
1X,'STARKE' KONSTANTE: BETA =',Q14.8, 00004900
1X,'MASSENFaktor: AMU =',Q14.8, (KG), 00005000

```



```
*VERSION 1.3.0 (01 MAY 80)      GINIT SYSTEM/370 FORTRAN H EXTENDED (ENHANCED)    DATE 82.223/09.22.04    PAGE 3
          * /IX,
          *)
ISN 0066      RETURN
ISN 0067      END
*****
*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF TERM IBM FLAG(I)
*STATISTICS* SOURCE STATEMENTS = 66, PROGRAM SIZE = 8800, SUBPROGRAM NAME = GINIT
*STATISTICS* NO DIAGNOSTICS GENERATED
***** END OF COMPILE *****
68K BYTES OF CORE NOT USED
```



```

ISN 0021      ALF3=QEXP(K-1.00)/K-KQ*(ALFA/3.00*(1.00+QSQRT(ETAQK(KQ,K)))*)
              * (X1/ETAQK(KQ,K))*2*(2*IK+1)*ETAQK(KQ,K)*3+ETAQK(1.00,1.00)/
              * (EBN*ETAQK(KQ,K))*2.00*X1*ETAQK(KQ,K)*IK*((1.00-
              *QSQRT(ETAQK(KQ,K)))/(1.00+QSQRT(ETAQK(KQ,K)))*2)
              (3-5) * F(KQ,K)
              REAL
ISN 0022      AN3=2.00*ALF3
              PRINT INTERMEDIATE RESULTS
              WRITE(6,300) IS,IQ1,IQ2,IQ3,IQ4
              FORMAT(1X,'IS',I1,I2,I3,IQ4,'/1X,5I5)
ISN 0023      IF (IPRINT.GE.2) WRITE(6,100) ALF1,ALF2,ALF3,AN1,AN2,AN3
ISN 0024      FORMAT(1X,'ALF1',I1,ALF2,I1,ALF3,I1,AN1,I1,AN2,I1,AN3,I1)
ISN 0025      100
ISN 0027      C---- (4-2)
              AN1
              AN2
              AN3*/1X,6Q16.8) ALF3
ISN 0028      C---- GKQ=Q1*3*ALF1+Q2*2*ALF2+Q3*ALF3+QEXP((1.00-2.00*K)/3.00)
              (4-3)
              REAL
              REAL
00003700
00003710
00003711
00003712
00003713
00003714
00004100
00004200
00004210
00004211
00004212
00004220
00004230
00004240
00004341
00004441
00004553

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```

*VERSION 1.3.0 (01 MAY 80)      GBASE      SYSTEM/370 FORTRAN H EXTENDED (ENHANCED)      DATE 82.223/09.22.05      PAGE 2
ISN 0029      IF (2-IK.NE.0) GOTO 50
ISN 0031      GOTO 51
ISN 0032      50      TEMP1=((1.00-QG)*(A11-PG*(A12+KAPPA*KQ/ETAQK(KQ,K)*A13)-
              *QFLOAT(IBINOM(IPG,2))*(A14-KQ/ETAQK(KQ,K)*A15))
              *KAPPA*QG*ETAQK(KQ,K)*A16))*2-1K)
              GOTO 54
ISN 0033      TEMP1=1.00
ISN 0034      51
ISN 0035      54      IF (IK-1.NE.0) GOTO 52
ISN 0037      GOTO 53
ISN 0038      52      TEMP2=((KQ-1.00)*A21+(1.00-PG)*A22+QFLOAT(IBINOM(IPG,2))*(A23-QX*
              *ETAQK(KQ,K)/(1.00+A24*(1.00+QX))*A25)+KAPPA*(A26+KQ*ETAQK(KQ,K)
              *2*A31)+QFLOAT(IBINOM(IPG,3))*ETAQK(KQ,K)*A32+
              *QFLOAT(IBINOM(IPG,3))*(KQ*3*A33/(3.00-KQ)*(QX-(-1.00)*IKQ)+
              *EBN*(PG-QG)*ETA*((KQ-1.00)*KQ/4.00)/(8.00-A66*KQ*(KQ-1.00))
              *2*(1.00-KQ/ETAQK(KQ,K))*2.00-KQ)*A34*(1-IQX)*A35)*
              *ETAQK(KQ,K)/ETA*2-A36))*2*(IK-1)
              GOTO 55
ISN 0039      53      TEMP2=1.00
ISN 0040      55      WGXX=TEMP1+TEMP2
ISN 0041      C---- (4-2)
              WGXX=GKQ*WGXX
              REAL
ISN 0042      C---- (4-5)
              AN=PG*A42*(1.00-KAPPA*A43*(1.00+A44*(-ALFA))*2-1K)*A45*(IK-1)
              *2*(1.00-KAPPA*QG*A46*(2.00-K))-A51*(K-1.00)*(1.00-KAPPA)
              (4-6)
ISN 0043      C---- (4-4)
              AQ=1.00-KQ*A52*(1.00-2.00*KAPPA*A53*IK)*(1.00+QX/6.00*(3.00-QX)
              *2*(K-1.00)*(1.00-KAPPA))
              REAL
ISN 0044      C---- (4-7)
              AGX=A41/K*(1.00+AN*AQ)
              REAL
ISN 0045      C---- (4-7)
              BGX=(A54*A55*(IK-1)*(1.00+PG*A56*(1.00-KAPPA*A61*A62*(1-1K))*
              *2*(1.00+KQ*A63*(1.00+KAPPA*A64)))+(1.00-1.00/K*(A65*(KQ+K-1.00)))*
              *2.00-K)*QFLOAT(IBINOM(IPG,2))*(1.00-QFLOAT(IBINOM(IPG,3))))
              *2*(K*IPG*(1.00+PG+QG+KAPPA*ETA*2.00-KQ))
ISN 0047      IF (IPRINT.GE.2) WRITE(6,200) GKQ,WGXX,AGX,BGX
ISN 0049      200      FORMAT(1X,'GKQ',I1,WGXX,I1,AGX,I1,BGX,I1)
              *
              AN
              AQ
              AGX
              BGX*/1X,7Q16.00004883
ISN 0050      *
ISN 0051      RETURN
              END
*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF TERM IBM FLAG(I)
*STATISTICS* SOURCE STATEMENTS = 50, PROGRAM SIZE = 6640, SUBPROGRAM NAME = GBASE
*STATISTICS* NO DIAGNOSTICS GENERATED
***** END OF COMPILATION *****
68K BYTES OF CORE NOT USED

```



```

ISN 0026      C---- W4=W3-QFLOAT(1K3)*ALF3
ISN 0027      IF(W4.EQ.0.00) GOTO 1
ISN 0029      IF(W4.GT.1.00) GOTO 3
ISN 0031      REST=QFLOAT(2*1K-1)/QFLOAT(3*1Q4)
ISN 0032      TEMP=-QLOG(W4)/REST
ISN 0033      1K4=IQINT(TEMP)
ISN 0034      GOTO 2
ISN 0035      1      1K4=IQINT(ALF3*QFLOAT(1K3))
ISN 0036      GOTO 2
ISN 0037      3      1K3=1K3-1
ISN 0038      1K3=1K3-1Q3
ISN 0039      N3=QFLOAT(1K3)
ISN 0040      1K4=1K4+IQINT(ALF3*QFLOAT(1K3))
ISN 0041      2      1K4=1K4-1Q4

```

```

00003600
00003700
00003800
00003900
00003910
00003920
00004000
00004100
00004200
00004210
00004220
00004230
00004240
00004250
00004260
00004270
00004300

```

```

*VERSION 1.3.0 (01 MAY 80)  GSTRUC  SYSTEM/370 FORTRAN H EXTENDED (ENHANCED)  DATE 82.223/09.22.05  PAGE 2
ISN 0042      C---- N4=QFLOAT(1N4)
ISN 0043      IF (IPRINT.GE.2) WRITE(6,200) W1,W2,W3,W4,REST
ISN 0045      200  *  FORMAT(1X,' W1 W2 W3 W4 REST',1X,5Q16.8)
ISN 0046      WRITE(6,100) 1K1,1K2,1K3,1K4,1N1,1N2,1N3,1N4
ISN 0047      100  *  FORMAT(1X,' 1K1 1K2 1K3 1K4 1N1 1N2 1N3 1N4 N4',1X,8I5)
ISN 0048      RETURN
ISN 0049      END
*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF TERM IBM FLAG(I)
*STATISTICS* SOURCE STATEMENTS = 48, PROGRAM SIZE = 2356, SUBPROGRAM NAME =GSTRUC
*STATISTICS* NO DIAGNOSTICS GENERATED
***** END OF COMPILATION *****
84K BYTES OF CORE NOT USED

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```

*VERSION 1.3.0 (01 MAY 80)
REQUESTED OPTIONS: NODECK,NOLIST,OPT(0) SYSTEM/370 FORTRAN H EXTENDED (ENHANCED) DATE 82.223/09.22.06
OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE) PAGE 1
SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF TERM IBM FLAG(I)

ISN 0002 C 28/08/81 109131228 MEMBER NAME ETAQK (HEIMS) FORTRAN 00000000
ISN 0003 C---- FUNCTION ETAQK(KQ,K) 00000100
ISN 0004 FORMEL (7A) 00000200
ISN 0005 IMPLICIT REAL*16 (A-H,J-Z) 00000210
ISN 0006 PI=3.1415926535Q0 00000220
ISN 0007 ETAQK=PI/(KQ**4*(4.Q0*K)+PI**4)**0.25Q0 00000400
END 00000500
*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE) 00000600
*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF TERM IBM FLAG(I)
*STATISTICS* SOURCE STATEMENTS = 6, PROGRAM SIZE = 532, SUBPROGRAM NAME = ETAQK
*STATISTICS* NO DIAGNOSTICS GENERATED
***** END OF COMPILATION *****
88K BYTES OF CORE NOT USED

```


FORTRAN H EXTENDED (ENHANCED)

SOURCE STATEMENTS =	105, PROGRAM SIZE =	6016, SUBPROGRAM NAME = MAIN
SOURCE STATEMENTS =	66, PROGRAM SIZE =	8800, SUBPROGRAM NAME = GINIT
SOURCE STATEMENTS =	50, PROGRAM SIZE =	6640, SUBPROGRAM NAME = GBASE
SOURCE STATEMENTS =	48, PROGRAM SIZE =	2356, SUBPROGRAM NAME = GSTRUC
SOURCE STATEMENTS =	14, PROGRAM SIZE =	2998, SUBPROGRAM NAME = GMASS
SOURCE STATEMENTS =	6, PROGRAM SIZE =	532, SUBPROGRAM NAME = ETAQK
SOURCE STATEMENTS =	8, PROGRAM SIZE =	394, SUBPROGRAM NAME = IBINOM

IHOERRM *	A10	624	ERRMON	CA10	IHOERRE	CA28
IHOQCONI*	D038	4				
IHOQCONO*	D040	4				
IHOQOPT *	D048	538				
IHOFCONI*	D580	416				
IHOFCONO*	D998	888	FQCONI#	D580		
IHOETRCH*	E250	2AE	FQCONO#	D998		
			IHOTRCH	E250	ERRTRA	E258

NAME	ORIGIN	LENGTH	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION
IHOVATBL*	E500	638								
IHOFTEN *	EB38	220								
CONST	ED58	114	FTEN#	EB38						
QUANT	EE70	128								
EXCHA	EF98	150								
PARMAT	FOE8	240								

ENTRY ADDRESS 00

TOTAL LENGTH F328

***MAIN DOES NOT EXIST BUT HAS BEEN ADDED TO DATA SET

AUTHORIZATION CODE IS 0.

BEZEICHNUNG
 CS = STRANGENESS QUANTENZAHL
 KQ = LADUNGSQUANTENZAHL, ABSOLUTWERT
 EPS = /1/-1/ TEILCHEN/ANTITEILCHEN
 QX = LADUNGSQUANTENZAHL MIT VORZEICHEN
 N = HAUPTQUANTENZAHL (GRUNDZUSTAND N = 0)
 AM = MASSE DES TEILCHENS
 DIE UEBRIGEN GROSSEN SIND
 GANZZAHLIGE STRUKTURKONSTANTE

=====
 E
 BARYON NUMBER + 1 = 1
 2 * ISOSPIN PG = 1
 2 * SPIN QG = 1
 DOUBLETT KAPPA = 0

IS	IQ1	IQ2	IQ3	IQ4
2	3	3	2	1

IK1	IK2	IK3	IK4	N1	N2	N3	N4
3	3	2	1	0	0	0	0

CS	KQ	EPS	QX	N	AM (MEV)
0	0	1	0	0	0.50688314Q+00

*** NO EXCITATION POSSIBLE ***

IS	IQ1	IQ2	IQ3	IQ4
2	3	3	2	1

IK1	IK2	IK3	IK4	N1	N2	N3	N4
3	3	2	1	0	0	0	0

CS	KQ	EPS	QX	N	AM (MEV)
0	1	1	-1	0	0.51100326Q+00

*** NO EXCITATION POSSIBLE ***

=====
 MU
 BARYON NUMBER + 1 = 1
 2 * ISOSPIN PG = 1
 2 * SPIN QG = 1
 DOUBLETT KAPPA = 1

IS	IQ1	IQ2	IQ3	IQ4
2	3	3	2	1

IK1	IK2	IK3	IK4	N1	N2	N3	N4
14	9	13	7	11	6	11	6

CS	KQ	EPS	QX	N	AM (MEV)
0	1	1	-1	0	0.10565945Q+03

ILE IL1 IL2 IL3 IL4
 3252 42 61 89 88

IK1	IK2	IK3	IK4	N1	N2	N3	N4
29	21	8	3	26	18	6	2

CS	KQ	EPS	QX	N	AM (MEV)
0	1	1	-1	2	0.17833926Q+04

IK1	IK2	IK3	IK4	N1	N2	N3	N4
30	47	28	0	27	44	26	-1

CS	KQ	EPS	QX	N	AM (MEV)
0	1	1	-1	3	0.23414777Q+04

IK1	IK2	IK3	IK4	N1	N2	N3	N4
31	48	93	8	28	45	91	7

CS	KQ	EPS	QX	N	AM (MEV)
0	1	1	-1	4	0.26750683Q+04

IK1	IK2	IK3	IK4	N1	N2	N3	N4
32	39	21	2	29	36	19	1

CS	KQ	EPS	QX	N	AM (MEV)
0	1	1	-1	5	0.27763355Q+04

IK1	IK2	IK3	IK4	N1	N2	N3	N4
32	55	82	7	29	52	80	6

CS	KQ	EPS	QX	N	AM (MEV)
0	1	1	-1	6	0.31478985Q+04

IK1	IK2	IK3	IK4	N1	N2	N3	N4
33	34	48	1	30	31	46	0

CS	KQ	EPS	QX	N	AM (MEV)
0	1	1	-1	7	0.30531624Q+04

IK1	IK2	IK3	IK4	N1	N2	N3	N4
33	46	67	10	30	43	65	9

CS	KQ	EPS	QX	N	AM (MEV)
0	1	1	-1	8	0.32497082Q+04

IK1	IK2	IK3	IK4	N1	N2	N3	N4
33	54	69	0	30	51	67	-1

CS 0	KQ 1	EPS 1	QX -1	N 7	AM (MEV) 0.38436946Q+04		
IK1 34	IK2 57	IK3 100	IK4 0	N1 31	N2 54	N3 98	N4 -1
CS 0	KQ 1	EPS 1	QX -1	N 18	AM (MEV) 0.39194455Q+04		
IK1 35	IK2 7	IK3 3	IK4 5	N1 32	N2 4	N3 1	N4 4
CS 0	KQ 1	EPS 1	QX -1	N 19	AM (MEV) 0.36760171Q+04		
IK1 35	IK2 15	IK3 30	IK4 3	N1 32	N2 12	N3 28	N4 2
CS 0	KQ 1	EPS 1	QX -1	N 20	AM (MEV) 0.36905150Q+04		
IK1 35	IK2 20	IK3 41	IK4 1	N1 32	N2 17	N3 39	N4 0
CS 0	KQ 1	EPS 1	QX -1	N 21	AM (MEV) 0.37094243Q+04		
IK1 35	IK2 24	IK3 37	IK4 3	N1 32	N2 21	N3 35	N4 2
CS 0	KQ 1	EPS 1	QX -1	N 22	AM (MEV) 0.37270972Q+04		
IK1 35	IK2 27	IK3 43	IK4 1	N1 32	N2 24	N3 41	N4 0
CS 0	KQ 1	EPS 1	QX -1	N 23	AM (MEV) 0.37483777Q+04		
IK1 35	IK2 30	IK3 19	IK4 0	N1 32	N2 27	N3 17	N4 -1
CS 0	KQ 1	EPS 1	QX -1	N 24	AM (MEV) 0.37652425Q+04		
IK1 35	IK2 32	IK3 34	IK4 2	N1 32	N2 29	N3 32	N4 1
CS 0	KQ 1	EPS 1	QX -1	N 25	AM (MEV) 0.37876093Q+04		
IK1 35	IK2 34	IK3 31	IK4 0	N1 32	N2 31	N3 29	N4 -1
CS 0	KQ 1	EPS 1	QX -1	N 26	AM (MEV) 0.38078032Q+04		
IK1 35	IK2 36	IK3 12	IK4 1	N1 32	N2 33	N3 10	N4 0
CS 0	KQ 1	EPS 1	QX -1	N 27	AM (MEV) 0.38277211Q+04		
IK1 35	IK2 37	IK3 55	IK4 3	N1 32	N2 34	N3 53	N4 2
CS 0	KQ 1	EPS 1	QX -1	N 28	AM (MEV) 0.38539020Q+04		
IK1 35	IK2 39	IK3 9	IK4 1	N1 32	N2 36	N3 7	N4 0
CS 0	KQ 1	EPS 1	QX -1	N 29	AM (MEV) 0.38681786Q+04		
IK1 35	IK2 40	IK3 33	IK4 1	N1 32	N2 37	N3 31	N4 0
CS 0	KQ 1	EPS 1	QX -1	N 30	AM (MEV) 0.38879151Q+04		
IK1 35	IK2 41	IK3 49	IK4 0	N1 32	N2 38	N3 47	N4 -1
CS 0	KQ 1	EPS 1	QX -1	N 31	AM (MEV) 0.39097493Q+04		
IK1 35	IK2 42	IK3 59	IK4 6	N1 32	N2 39	N3 57	N4 5
CS 0	KQ 1	EPS 1	QX -1	N 32	AM (MEV) 0.39313474Q+04		
IK1 35	IK2 43	IK3 61	IK4 0	N1 32	N2 40	N3 59	N4 -1

CS 0	KQ 1	EPS 1	QX -1	N 41	AM (MEV) 0.40903538Q+04		
IK1 35	IK2 50	IK3 49	IK4 6	N1 32	N2 47	N3 47	N4 5
CS 0	KQ 1	EPS 1	QX -1	N 42	AM (MEV) 0.40894614Q+04		
IK1 35	IK2 51	IK3 5	IK4 6	N1 32	N2 48	N3 3	N4 5
CS 0	KQ 1	EPS 1	QX -1	N 43	AM (MEV) 0.41029239Q+04		
IK1 35	IK2 51	IK3 63	IK4 1	N1 32	N2 48	N3 61	N4 0
CS 0	KQ 1	EPS 1	QX -1	N 44	AM (MEV) 0.41210645Q+04		
IK1 35	IK2 52	IK3 13	IK4 0	N1 32	N2 49	N3 11	N4 -1
CS 0	KQ 1	EPS 1	QX -1	N 45	AM (MEV) 0.41289877Q+04		
IK1 35	IK2 52	IK3 68	IK4 1	N1 32	N2 49	N3 66	N4 0
CS 0	KQ 1	EPS 1	QX -1	N 46	AM (MEV) 0.41494926Q+04		
IK1 35	IK2 53	IK3 13	IK4 2	N1 32	N2 50	N3 11	N4 1
CS 0	KQ 1	EPS 1	QX -1	N 47	AM (MEV) 0.41554224Q+04		
IK1 35	IK2 53	IK3 65	IK4 4	N1 32	N2 50	N3 63	N4 3
CS 0	KQ 1	EPS 1	QX -1	N 48	AM (MEV) 0.41741098Q+04		
IK1 35	IK2 54	IK3 4	IK4 0	N1 32	N2 51	N3 2	N4 -1
CS 0	KQ 1	EPS 1	QX -1	N 49	AM (MEV) 0.41820901Q+04		
IK1 35	IK2 54	IK3 53	IK4 0	N1 32	N2 51	N3 51	N4 -1
CS 0	KQ 1	EPS 1	QX -1	N 50	AM (MEV) 0.41950055Q+04		
IK1 35	IK2 54	IK3 101	IK4 1	N1 32	N2 51	N3 99	N4 0
CS 0	KQ 1	EPS 1	QX -1	N 51	AM (MEV) 0.42288258Q+04		
IK1 35	IK2 55	IK3 35	IK4 2	N1 32	N2 52	N3 33	N4 1
CS 0	KQ 1	EPS 1	QX -1	N 52	AM (MEV) 0.42161913Q+04		
IK1 35	IK2 55	IK3 80	IK4 0	N1 32	N2 52	N3 78	N4 -1
CS 0	KQ 1	EPS 1	QX -1	N 53	AM (MEV) 0.42398950Q+04		
IK1 35	IK2 56	IK3 10	IK4 3	N1 32	N2 53	N3 8	N4 2
CS 0	KQ 1	EPS 1	QX -1	N 54	AM (MEV) 0.42404658Q+04		
IK1 35	IK2 56	IK3 53	IK4 1	N1 32	N2 53	N3 51	N4 0
CS 0	KQ 1	EPS 1	QX -1	N 55	AM (MEV) 0.42529536Q+04		
IK1 35	IK2 56	IK3 95	IK4 0	N1 32	N2 53	N3 93	N4 -1
CS 0	KQ 1	EPS 1	QX -1	N 56	AM (MEV) 0.42813838Q+04		
IK1 35	IK2 57	IK3 20	IK4 2	N1 32	N2 54	N3 18	N4 1

CS 0	KQ 1	EPS 1	QX -1	N 65	AM (MEV) 0.43665567Q+04		
IK1 35	IK2 59	IK3 118	IK4 2	N1 32	N2 56	N3 116	N4 1
CS 0	KQ 1	EPS 1	QX -1	N 66	AM (MEV) 0.43986955Q+04		
IK1 35	IK2 60	IK3 29	IK4 1	N1 32	N2 57	N3 27	N4 0
CS 0	KQ 1	EPS 1	QX -1	N 67	AM (MEV) 0.43726811Q+04		
IK1 35	IK2 60	IK3 63	IK4 2	N1 32	N2 57	N3 61	N4 1
CS 0	KQ 1	EPS 1	QX -1	N 68	AM (MEV) 0.43870601Q+04		
IK1 35	IK2 60	IK3 96	IK4 1	N1 32	N2 57	N3 94	N4 0
CS 0	KQ 1	EPS 1	QX -1	N 69	AM (MEV) 0.44110457Q+04		
IK1 36	IK2 1	IK3 1	IK4 0	N1 33	N2 -2	N3 -1	N4 -1
CS 0	KQ 1	EPS 1	QX -1	N 70	AM (MEV) 0.41065692Q+04		
IK1 36	IK2 5	IK3 9	IK4 4	N1 33	N2 2	N3 7	N4 3
CS 0	KQ 1	EPS 1	QX -1	N 71	AM (MEV) 0.41075141Q+04		
IK1 36	IK2 8	IK3 0	IK4 1	N1 33	N2 5	N3 -2	N4 0
CS 0	KQ 1	EPS 1	QX -1	N 72	AM (MEV) 0.41084785Q+04		
IK1 36	IK2 9	IK3 14	IK4 2	N1 33	N2 6	N3 12	N4 1
CS 0	KQ 1	EPS 1	QX -1	N 73	AM (MEV) 0.41102038Q+04		
IK1 36	IK2 11	IK3 4	IK4 8	N1 33	N2 8	N3 2	N4 7
CS 0	KQ 1	EPS 1	QX -1	N 74	AM (MEV) 0.41114744Q+04		
IK1 36	IK2 12	IK3 10	IK4 0	N1 33	N2 9	N3 8	N4 -1
CS 0	KQ 1	EPS 1	QX -1	N 75	AM (MEV) 0.41131633Q+04		
IK1 36	IK2 13	IK3 15	IK4 8	N1 33	N2 10	N3 13	N4 7
CS 0	KQ 1	EPS 1	QX -1	N 76	AM (MEV) 0.41154177Q+04		
IK1 36	IK2 14	IK3 16	IK4 0	N1 33	N2 11	N3 14	N4 -1
CS 0	KQ 1	EPS 1	QX -1	N 77	AM (MEV) 0.41173320Q+04		
IK1 36	IK2 15	IK3 16	IK4 3	N1 33	N2 12	N3 14	N4 2
CS 0	KQ 1	EPS 1	QX -1	N 78	AM (MEV) 0.41194758Q+04		
IK1 36	IK2 16	IK3 13	IK4 4	N1 33	N2 13	N3 11	N4 3
CS 0	KQ 1	EPS 1	QX -1	N 79	AM (MEV) 0.41214835Q+04		
IK1 36	IK2 17	IK3 7	IK4 0	N1 33	N2 14	N3 5	N4 -1
CS 0	KQ 1	EPS 1	QX -1	N 80	AM (MEV) 0.41235916Q+04		
IK1 36	IK2 18	IK3 0	IK4 18	N1 33	N2 15	N3 -2	N4 17

CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	89	0.41473143Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
36	23	30	2	33	20	28	1	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	90	0.41514591Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
36	24	7	1	33	21	5	0	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	91	0.41528947Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
36	24	33	13	33	21	31	12	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	92	0.41578506Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
36	25	7	1	33	22	5	0	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	93	0.41587723Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
36	25	32	1	33	22	30	0	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	94	0.41633168Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
36	26	4	1	33	23	2	0	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	95	0.41649659Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
36	26	29	3	33	23	27	2	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	96	0.41688473Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
36	26	53	0	33	23	51	-1	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	97	0.41778720Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
36	27	23	4	33	24	21	3	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	98	0.41742670Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
36	27	47	3	33	24	45	2	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	99	0.41820015Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
36	28	14	3	33	25	12	2	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	100	0.41800764Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
36	28	38	8	33	25	36	7	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	101	0.41859034Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
36	29	2	1	33	26	0	0	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	102	0.41870396Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
36	29	26	7	33	26	24	6	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	103	0.41902583Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
36	29	49	3	33	26	47	2	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	104	0.41981649Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
36	30	11	2	33	27	9	1	

11	77777777777777	33333333333333
111	77777777777777	33333333333333
1111	77777777777777	33333333333333
11	77	33
11	77	33
11	77	33
11	77	3333
11	77	3333
11	77	33
11	77	33
11111111111111	77	33
11111111111111	77	33333333333333
	77	33333333333333

```

HH      HH      00000000      555555555555
HH      HH      0000000000      555555555555
HH      HH      00      00      55
HH      HH      00      00      55
HH      HH      00      00      55
HHHHHHHHHHHHHH      00      00      555555555555
HHHHHHHHHHHHHH      00      00      555555555555
HH      HH      00      00      55
HH      HH      00      00      55
HH      HH      00      00      55
HH      HH      0000000000      555555555555
HH      HH      00000000      5555555555

```

11	77777777777777	333333333333
111	7777777777777	333333333333
1111	77	33
11	77	33
11	77	33
11	77	3333
11	77	3333
11	77	33
11	77	33
111111111111	77	333333333333
111111111111	77	333333333333

```

HH      HH      00000000      555555555555
HH      HH      0000000000      555555555555
HH      HH      00      00      55
HH      HH      00      00      55
HH      HH      00      00      55
HHHHHHHHHHHHHHHH      00      00      555555555555
HHHHHHHHHHHHHHHH      00      00      555555555555
HH      HH      00      00      55
HH      HH      00      00      55
HH      HH      00      00      55
HH      HH      0000000000      555555555555
HH      HH      00000000      5555555555

```

11	777777777777	3333333333
111	777777777777	333333333333
1111	77	33
11	77	33
11	77	33
11	77	3333
11	77	3333
11	77	33
11	77	33
111111111111	77	333333333333
111111111111	77	333333333333

```

22      IEF6861
23      IEF6481
IEF1421 F15HDS06
IEF3731 STEP /FOR
IEF3741 STEP /FOR
IEF1421 F15HDS06
IEF3731 STEP /LKE
IEF3741 STEP /LKE
IEF1421 F15HDS06
IEF3731 STEP /GO
IEF3741 STEP /GO
IEF3751 JOB /F15
IEF3761

```

Bei der Ex-
Strangness
jedoch nur
Bei richti-
S=-2, was
blettkomp-
bemerken,
trums rei-
Im Comput

11	777777777777	3333333333
111	777777777777	3333333333
1111	777777777777	3333333333
11	77	33
11	77	33
11	77	33
11	77	33
11	77	3333
11	77	3333
11	77	33
11	77	33
111111111111	77	33
111111111111	77	3333333333
	77	3333333333

68K BYTES OF CORE NOT USED

```

*VERSION 1.3.0 (01 MAY 80)
REQUESTED OPTIONS: NODECK, NOLIST, OPT(0)
OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF TERM IBM FLAG(I)
SYSTEM/370 FORTRAN H EXTENDED (ENHANCED) DATE 82.223/09.22.04 PAGE 1

ISN 0002 C 17/03/82 208091701 MEMBER NAME GINIT (HEIMS) FORTRAN 00000000
SUBROUTINE GINIT 00000100
ISN 0003 C---- INITIALISIERT KONSTANTE GROESSEN IM COMMON /CONST/ 00000200
ISN 0004 IMPLICIT REAL*16 (A-H,J-Z) 00000300
COMMON /CONST/ PI,HQ,C,GAM,RG,SO,FAKMEV,ETA,THETA,EQ,ALFA,AMU, 00000400
*ALFP,ALFM,XI,EBN,BETA,IPRINT 00000500
COMMON /PARMAT/ A11,A12,A13,A14,A15,A16,A21,A22,A23,A24,A25,A26, 00000510
*A31,A32,A33,A34,A35,A36,A41,A42,A43,A44,A45,A46, 00000520
*A51,A52,A53,A54,A55,A56,A61,A62,A63,A64,A65,A66 00000530
ISN 0006 PI=3.1415926535Q0 00000600
ISN 0007 EBN=QEXP(1.00) 00000700
ISN 0008 HQ=1.0545887Q-34 00000800
ISN 0009 C=2.99792458Q8 00000900
ISN 0010 GAM=6.6732Q-11 00001000
ISN 0011 RG=376.73037659Q0 00001100
ISN 0012 SO=1.00 00001200
ISN 0013

```


REQUESTED OPTIONS: NODECK, NOLIST, OPT(0)
 OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
 SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF TERM IBM FLAG(I)

```

C 17/03/82 207141003 MEMBER NAME GBASE (HEIMS) FORTRAN
ISN 0002 SUBROUTINE GBASE 00000000
C---- ROUTINE COMPUTES NUMBERS FOR THE GROUND LEVEL N=0 00000100
ISN 0003 IMPLICIT REAL*16 (A-H, J-Z) 00000200
ISN 0004 COMMON /CONST/ PI, HQ, C, GAM, RG, SO, FAKHEV, ETA, THETA, EQ, ALFA, AMU, 00000300
*ALFP, ALFM, XI, EBN, BETA, IPRINT 00000400
ISN 0005 COMMON /QUANT/ N, K, PG, QG, KQ, KAPPA, N1, N2, N3, N4, CS, IK, IPG, IQG, 00000500
*IKAPPA, EPS, QX, IN, IN1, IN2, IN3, IN4, ICS, IEPS, IQX, IX, IKQ, X, 00000510
*IK1, IK2, IK3, IK4 00000520
ISN 0006 COMMON /EXCHA/ WGX, AGX, BGX, ALF1, ALF2, ALF3, FN, Q1, Q2, Q3, Q4, 00000620
*AN1, AN2, AN3, FIG, GKQ, WGXX, AN, AQ, KGH, 00000800
*IQ1, IQ2, IQ3, IQ4 00000900
ISN 0007 COMMON /PARMAT/ A11, A12, A13, A14, A15, A16, A21, A22, A23, A24, A25, A26, 00001000
*A31, A32, A33, A34, A35, A36, A41, A42, A43, A44, A45, A46, 00001010
*A51, A52, A53, A54, A55, A56, A61, A62, A63, A64, A65, A66, 00001020
C---- GROESSEN, DIE ALLEIN VON K ABHAENGEN 00001030
ISN 0008 IS=IK**2+1 00001100
C---- (3-6) # F(K) INTEGER 00001110
ISN 0009 IQ1=3*2**IS-2 00001200
ISN 0010 Q1=QFLOAT(IQ1) 00001300
C---- (3-6) # F(K) INTEGER 00001400
ISN 0011 IQ2=2**IS-1 00001500
ISN 0012 Q2=QFLOAT(IQ2) 00001600
C---- (3-6) # F(K) INTEGER 00001700
ISN 0013 IQ3=2**IS+2*(-1)**IK 00001800
ISN 0014 Q3=QFLOAT(IQ3) 00001900
C---- (3-6) # F(K) INTEGER 00002000
ISN 0015 IQ4=2**IS-1 00002100
ISN 0016 Q4=QFLOAT(IQ4) 00002200
C---- GROESSEN DIE ZUSAETZLICH NOCH VON DER LADUNGSQUANTENZAH KQ 00002300
C---- ABHAENGEN 00002400
ISN 0017 C---- (3-5) # F(KQ, K) REAL 00002500
ALF1=(1.Q0+QSQRT(ETAQK(KQ, K)))/2.Q0 00003310
C---- (3-5) # F(KQ, K) REAL 00003320
ISN 0018 AN1=ALF1 00003400
C---- (3-5) # F(KQ, K) REAL 00003500
ISN 0019 ALF2=1.Q0/ETAQK(KQ, K) 00003510
C---- (3-5) # F(KQ, K) REAL 00003520
ISN 0020 AN2=2.Q0*ALF2/3.Q0 00003600
C---- (3-5) # F(KQ, K) REAL 00003700
ISN 0021 ALF3=QEXP(K-1.Q0)/K-KQ*(ALFA/3.Q0*(1.Q0+QSQRT(ETAQK(KQ, K)))* 00003710
*(X1/ETAQK(KQ, K)**2)**(2*IK+1)*ETAQK(KQ, K)**3+ETAQK(1.Q0, 1.Q0)/ 00003711
*(EBN*ETAQK(KQ, K))*(2.Q0*X1*ETAQK(KQ, K))*IK*((1.Q0- 00003712
*QSQRT(ETAQK(KQ, K)))/(1.Q0+QSQRT(ETAQK(KQ, K))))**2) 00003713
C---- (3-5) # F(KQ, K) REAL 00003714
ISN 0022 AN3=2.Q0*ALF3 00004100
C---- PRINT INTERMEDIATE RESULTS 00004200
ISN 0023 WRITE(6, 300) IS, IQ1, IQ2, IQ3, IQ4 00004210
ISN 0024 300 FORMAT(1X, 'IS IQ1 IQ2 IQ3 IQ4'/1X, 5I5) 00004211
ISN 0025 IF(IPRINT.GE.2) WRITE(6, 100) ALF1, ALF2, ALF3, AN1, AN2, AN3 00004212
ISN 0027 100 FORMAT(1X, 'ALF1 ALF2 ALF3 AN1 AN2 AN3'/1X, 6Q16.8) 00004220
C---- (4-2) AN1 AN2 AN3 00004230
ISN 0028 C---- GKQ=Q1**3*ALF1+Q2**2*ALF2+Q3*ALF3+QEXP((1.Q0-2.Q0*K)/3.Q0) 00004240
(4-3) REAL 00004341
REAL 00004441
00004553

```

*VERSION 1.3.0 (01 MAY 80) GBASE SYSTEM/370 FORTRAN H EXTENDED (ENHANCED) DATE 82.223/09.22.05 PAGE 2

```

ISN 0029 IF(2-IK.NE.0) GOTO 50 00004568
ISN 0031 GOTO 51 00004569
ISN 0032 50 TEMP1=((1.Q0-QG)*(A11-PG*(A12+KAPPA*KQ/ETAQK(KQ, K)*A13)- 00004570
*QFLOAT(IBINOM(IPG, 2))*(A14-KQ/ETAQK(KQ, K)*A15)) 00004571
*+KAPPA*QG*ETAQK(KQ, K)*A16)**(2-IK) 00004572
ISN 0033 GOTO 54 00004573
ISN 0034 51 TEMP1=1.Q0 00004574
ISN 0035 54 IF(1K-1.NE.0) GOTO 52 00004575
ISN 0037 GOTO 53 00004576
ISN 0038 52 TEMP2=((KQ-1.Q0)*A21+(1.Q0-PG)*A22+QFLOAT(IBINOM(IPG, 2))*(A23-QX* 00004577
*ETAQK(KQ, K)/(1.Q0+A24*(1.Q0+QX))*A25)+KAPPA*(A26+KQ*ETAQK(KQ, K) 00004578
**2*A31)+QFLOAT(IBINOM(IQG, 3))*ETAQK(KQ, K)*A32+ 00004579
*QFLOAT(IBINOM(IPG, 3))*(KQ**3*A33/(3.Q0-KQ))*(QX-(-1.Q0)**IKQ)+ 00004580
*EBN*(PG-QG)*ETAQK(KQ, K)*(KQ-1.Q0)*KQ/4.Q0/(8.Q0-A66*KQ*(KQ-1.Q0)) 00004581
**((1.Q0-KQ/ETAQK(KQ, K))*(2.Q0-KQ)*A34**(-1-IQX)*A35)* 00004582
*ETAQK(KQ, K)/ETA**2-A36))**IK-1) 00004583
ISN 0039 GOTO 55 00004584
ISN 0040 53 TEMP2=1.Q0 00004585
ISN 0041 55 WGXX=TEMP1+TEMP2 00004586
ISN 0042 C---- (4-2) REAL 00004588
WGXX=GKQ*WGXX 00004589

```



```
*VERSION 1.3.0 (01 MAY 80)          SYSTEM/370 FORTRAN H EXTENDED (ENHANCED)    DATE 82.223/09.22.05    PAGE 1
REQUESTED OPTIONS: NODECK,NOLIST,OPT(0)
OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
SOURCE EBCDIC NOLIST NOECC OBJECT NONAP NOFORMAT GOSTMT NOXREF ALC NOANSF TERM IBM FLAG(I)
C 17/05/82 207140951 MEMBER NAME CSDPAG
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*VERSION 1.3.0 (01 MAY 80) GSTRUC SYSTEM/370 FORTRAN H EXTENDED (ENHANCED) DATE 82.223/09.22.05 PAGE 2
  ISN 0042 C---- N4=QFLOAT(IN4) TEST AUSDRUCK 00004400
  ISN 0043 IF (IPRINT.GE.2) WRITE(6,200) W1,W2,W3,W4,REST 00004500
  ISN 0045 200 FORMAT(1X,' W1 W2 W3 W4 W3 00004510
  * W4 REST'/1X,5Q16.8) 00004520
  ISN 0046 WRITE(6,100) IK1,IK2,IK3,IK4,IN1,IN2,IN3,IN4 00004530
  ISN 0047 100 FORMAT(1X,' IK1 IK2 IK3 IK4 N1 N2 N3 N4'/1X,8I5) 00004600
  ISN 0048 RETURN 00004800
  ISN 0049 END 00005000
*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE) 00005100
*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF TERM IBM FLAG(1)
*STATISTICS* SOURCE STATEMENTS = 48, PROGRAM SIZE = 2356, SUBPROGRAM NAME =GSTRUC
*STATISTICS* NO DIAGNOSTICS GENERATED
***** END OF COMPILATION *****
84K BYTES OF CORE NOT USED

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84K BYTES OF CORE NOT USED


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*VERSION 1.3.0 (01 MAY 80)          SYSTEM/370 FORTRAN H EXTENDED (ENHANCED)    DATE 82.223/09.22.06    PAGE 1
REQUESTED OPTIONS: NODECK,NOLIST,OPT(0)
OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF TERM IBM FLAG(I)

ISN 0002      C 18/05/82 207140959 MEMBER NAME GMASS (HEIMS) FORTRAN 00000000
               SUBROUTINE GMASS(AM)
C----- ROUTINE BERECHNET DIE MASEN UND LEBENSDAUERN DER TEILCHEN 00000100
C----- AUS DEN QUANTENZAHLEN IM COMMON /QUANT/ UND DEN KONSTANTEN 00000200
C----- IM COMMON /CONST/ 00000300
ISN 0003      IMPLICIT REAL*16 (A-H,J-Z) 00000400
ISN 0004      COMMON /CONST/ PI,HQ,C,GAM,RG,SO,PAKMEV,ETA,THETA,EQ,ALFA,AMU, 00000500
               *ALFP,ALFM,XI,EBN,BETA,IPRINT 00000600
ISN 0005      COMMON /QUANT/ N,K,PG,QG,KQ,KAPPA,N1,N2,N3,N4,CS,IK,IPG,IQG, 00000700
               *IKAPPA,EPS,QX,IN,IN1,IN2,IN3,IN4,ICS,IEPS,IX,IKQ,X, 00000710
ISN 0006      *IK1,IK2,IK3,IK4 00000720
               COMMON /EXCHA/ WGX,AGX,BGX,ALF1,ALF2,ALF3,FH,Q1,Q2,Q3,Q4, 00000721
               *AN1,AN2,AN3,FIG,GKQ,WGKX,AN,AQ,KGH, 00000730
               *IQ1,IQ2,IQ3,IQ4 00000740
C----- (3-9) # F(K) INTEGER 00000750
ISN 0007      KGH=4.00*(ALF1*QFLOAT(IK1**2*(1+IK1)**2)/4.00+ 00001206
               *ALF2*QFLOAT(IK2*(2*IK2**2+3*IK2+1))/6.00+ 00001207
               *ALF3*QFLOAT(IK3*(IK3+1))/2.00*QFLOAT(IK4)) 00001208
C----- (3-7) # F(K,KQ,PG,QG,KAPPA) 00001209
ISN 0008      FIG=3.00*PG/(PI*QSORT(ETAQK(KQ,K)))*(1.00-ALFM/ALFP)*(PG+QG)* 00001210
               *(-1.00)*(IPG+IQG)*(1.00-ALFA/3.00*PI/2.00*(K-1.00)*3.00*(1.00- 00001211
               *KQ/2.00))*(1.00+2.00*K*KAPPA/(3.00*ETA**2)*XI*(1.00+XI**2* 00001212
               *(PG-QG)*(PI**2-KQ)))/(1.00+4.00*XI/K*QFLOAT(EBINOM(IPG,2))* 00001213
               *(XI/6.00)*KQ)*(2.00*QSORT(ETAQK(1.00,1.00)*ETAQK(KQ,K))+ 00001214
               *KQ*ETA**2*(K-1.00))*(1.00+(4.00*PI*ALFA)/(ETA*QSORT(ETA)))* 00001215
               *(1.00+QG*(1.00-KAPPA)*(2.00-K)*N1/Q1)+4.00*(1.00-ALFM/ALFP)* 00001216
               *ALFA/XI**2*(PG+QG)+4.00*KQ*ALFM/ALFP 00001217
ISN 0009      FIK=(FIG-4.00*KQ*ALFM/ALFP)/4.00 00001218
ISN 0010      IF(IPRINT.GE.2) WRITE(6,100) IK1,IK2,IK3,IK4,KGH,FIG,FIK 00001227
ISN 0012      100 FORMAT(1X,' IK1 IK2 IK3 IK4 KGH FIG FIK'/1X,4I5,3Q16.8) 00001237
C----- (3-9) # F FIK*1X,4I5,3Q16.8) KGH FIG 00001247
ISN 0013      AM=AMU*PAKMEV*ALFP*(KGH+FIG) REAL 00001257
ISN 0014      RETURN 00001300
ISN 0015      END 00001400
               00009600
               00009700
*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF TERM IBM FLAG(I)
*STATISTICS* SOURCE STATEMENTS = 14, PROGRAM SIZE = 2998, SUBPROGRAM NAME = GMASS
***** END OF COMPILATION *****
84K BYTES OF CORE NOT USED

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*VERSION 1.3.0 (01 MAY 80)          SYSTEM/370 FORTRAN H EXTENDED (ENHANCED)    DATE 82.223/09.22.06    PAGE 1
REQUESTED OPTIONS: NODECK,NOLIST,OPT(0)
OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF TERM IBM FLAG(I)

ISN 0002      C 28/08/81 109131228 MEMBER NAME ETAQK (HEIMS) FORTRAN 00000000
               FUNCTION ETAQK(KQ,K)
C----- FORMEL (7A) 00000100
ISN 0003      IMPLICIT REAL*16 (A-H,J-Z) 00000200
ISN 0004      PI=3.141592653500 00000210
ISN 0005      ETAQK=PI/(KQ**4*(4.00+K)+PI**4)*0.25Q0 00000220
ISN 0006      RETURN 00000400
ISN 0007      END 00000500
               00000600
*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF TERM IBM FLAG(I)
*STATISTICS* SOURCE STATEMENTS = 6, PROGRAM SIZE = 532, SUBPROGRAM NAME = ETAQK
***** END OF COMPILATION *****
88K BYTES OF CORE NOT USED

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*VERSION 1.3.0 (01 MAY 80)
REQUESTED OPTIONS: NODECK,NOLIST,OPT(0) SYSTEM/370 FORTRAN H EXTENDED (ENHANCED) DATE 82.223/09.22.06 PAGE 1
OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF TERM IBM FLAG(I)

ISN 0002 C 27/08/81 109131226 MEMBER NAME IBINOM (HEIMS) FORTRAN 00000000
ISN 0003 C---- FUNCTION IBINOM(I,K) 00000100
ISN 0005 COMPUTES BINOMIAL COEFFICIENTS 00000200
ISN 0006 IF(I.LT.K) GOTO 1 00000210
ISN 0007 IBINOM=IFAKUL(I)/(IFAKUL(K)*IFAKUL(I-K)) 00000300
ISN 0008 RETURN 00000400
ISN 0009 1 IBINOM=0 00000410
END 00000420
00000500

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF TERM IBM FLAG(I)
*STATISTICS* SOURCE STATEMENTS = 8, PROGRAM SIZE = 394, SUBPROGRAM NAME =IBINOM
***** END OF COMPILATION *****
*STATISTICS* NO DIAGNOSTICS THIS STEP 88K BYTES OF CORE NOT USED

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FORTRAN H EXTENDED (ENHANCED)
SOURCE STATEMENTS = 105, PROGRAM SIZE = 6016, SUBPROGRAM NAME = MAIN
SOURCE STATEMENTS = 66, PROGRAM SIZE = 8800, SUBPROGRAM NAME = GINIT
SOURCE STATEMENTS = 50, PROGRAM SIZE = 6640, SUBPROGRAM NAME = GBASE
SOURCE STATEMENTS = 48, PROGRAM SIZE = 2356, SUBPROGRAM NAME =GSTRUC
SOURCE STATEMENTS = 14, PROGRAM SIZE = 2998, SUBPROGRAM NAME = GMASS
SOURCE STATEMENTS = 6, PROGRAM SIZE = 532, SUBPROGRAM NAME = ETAQK
SOURCE STATEMENTS = 8, PROGRAM SIZE = 394, SUBPROGRAM NAME =IBINOM

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F64-LEVEL LINKAGE EDITOR OPTIONS SPECIFIED LET,LIST,MAP
 DEFAULT OPTION(S) USED - SIZE=(307200,65536)

MODULE MAP

CONTROL SECTION			ENTRY							
NAME	ORIGIN	LENGTH	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION
MAIN	00	1780								
GINIT	1780	2260								
GBASE	39E0	19F0								
GSTRUC	53D0	934								
GMASS	5D08	8B6								
ETAQK	68C0	214								
IBINOM	6AD8	18A								
IHOFIXPI*	6C68	178								
IHOFQTEN*	6DE0	110	FIXPI#	6C68						
IHOFQXPI*	6EF0	1A4	FQTEN#	6DE0						
IHOFQXPQ*	7098	B8C	FQXPI#	6EF0						
IHOECOMH*	7C28	E30	QEXP	7098	IH\$QEXP	7098	FQXP2#	70CE	FQXPQ#	7102
FIOAP# *	8A58	61C	QLOG10	712A	IH\$QLOG0	712A	QLOG	714C	IH\$QLOG	714C
IHOECOMH2*	9078	9A5	IBCOM#	7C5C	FDIOCS#	7D18	INTSWTCH	89A0		
IFAKUL *	9A20	E8	SEQDASD	944A						
IHOQSQRT*	9B08	22C								
IHOFCVTH*	9D38	CFA	QSQRT	9B08	IH\$QSQRT	9B08				
			ADCON#	9D38	FCVAOUTP	9DA4	FCVLOUTP	9DBC	FCVZOUTP	9DD4
IHOEFNTH*	AA38	800	FCVLOUTP	9DEC	FCVEOUTP	9E24	FCVCOUTP	9E24	ADCONI#	A534
IHOEFIOS*	B238	118C	ADCONO#	A550	INT6SWCH	AA31				
IHOFIOS2*	C3C8	642	ARITH#	AA38	ADJSWTCH	AFCC				
IHOERRM *	CA10	624	FIOCS#	B238	FIOCSBEP	B23E				
IHOQCONI*	D038	4	ERRMON	CA10	IHOERRE	CA28				
IHOQCONO*	D040	4								
IHOQOPT *	D048	538								
IHOFCONI*	D580	416								
IHOFCONO*	D998	8B8	FQCONI#	D580						
IHOETRCH*	E250	2AE	FQCONO#	D998						
			IHOTRCH	E250	ERRTRA	E258				

NAME	ORIGIN	LENGTH	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION
IHOATBL*	E500	638								
IHOFTEN *	EB38	220								
CONST	ED58	114								
QUANT	EE70	128								
EXCHA	EF98	150								
PARMAT	FOE8	240								

ENTRY ADDRESS 00
 TOTAL LENGTH F328
 ***MAIN DOES NOT EXIST BUT HAS BEEN ADDED TO DATA SET
 AUTHORIZATION CODE IS 0.

 * MASSENFORMEL DER ELEMENTARTEILCHEN NACH B. HEIM *
 * (H. D. SCHULZ, 26/7/82) *

IPRINT = 0
 EINGEGEBENE KONSTANTEN:

PI = 3.14159265
 BASIS OF NATURAL LOGARITHM: EBN = 2.71828183
 PLANCK WIRKUNGSQUANTUM/(2*PI): HQ = 0.10545887Q-33 (WS*S)
 LICHTGESCHWINDIGKEIT : C = 0.29979246Q+09 (M/S)
 GRAVITATIONSKONSTANTE : GAM = 0.66732000Q-10 (M**3*KG**-1*S**-2)
 WELLENWIDERSTAND DES VAKUUMS: RG = 376.73037659 (OHM)
 EINHEITSSTRECKE: SO = 1.00000000 (M)

ABGELEITETE KONSTANTE:

UMRECHNUNG KG - MEV: FAKMEV = 0.56095450Q+30 (MEV/KG)
 ZAHLENFAKTOR: ETA = 0.98998964Q+00
 ZAHLENFAKTOR: THETA = 0.79399127Q+01
 ELEMENTARLADUNG: EQ = 0.16021775Q-18 (A*S)
 FEINSTRUKTURKONSTANTE: ALFA = 0.72973511Q-02
 "STARKE" KONSTANTE: BETA = 0.99998589Q+00
 MASSENFAKTOR: AMU = 0.22590219Q-30 (KG)
 ZAHLENFAKTOR ALPHA PLUS: ALFP = 0.18322115Q-01
 ZAHLENFAKTOR ALPHA MINUS: ALFM = 0.81283449Q-02
 ZAHLENFAKTOR: XI = 0.16180340Q+01

PARAMETER MATRIX

0.25483393Q+03	0.14790690Q+02	0.12021658Q+02	0.13793985Q+03	0.24622984Q+01	0.73036070Q+02
0.20045757Q-03	0.13480450Q+00	0.36074128Q+00	0.17630043Q+01	0.33298461Q-02	0.28058241Q+00
0.38754712Q-02	0.43703972Q+00	0.10132166Q-01	0.24690843Q+01	0.30762153Q-02	0.10046837Q+01
0.62043340Q+00	0.39820465Q+01	0.80901699Q+00	0.74871411Q+00	0.30826097Q+00	0.53214928Q+01
0.10294024Q+01	0.44674036Q-01	0.43658717Q+01	0.88720479Q-02	0.42360680Q+01	0.71355583Q+01
0.84410941Q+00	0.81045177Q+00	0.11055358Q+00	0.10577864Q+01	0.64720368Q+00	0.16018369Q+01

=====

BEZEICHNUNGEN:
 CS = STRANGENESS QUANTENZAHL
 KQ = LADUNGSQUANTENZAHL, ABSOLUTWERT
 EPS = /1/-1/ TEILCHEN/ANTITEILCHEN
 QX = LADUNGSQUANTENZAHL MIT VORZEICHEN
 N = HAUPTQUANTENZAHL (GRUNDZUSTAND N = 0)
 AM = MASSE DES TEILCHENS
 DIE UEBRIGEN GROESSEN SIND
 GANZZAHLIGE STRUKTURKONSTANTE

=====

--- E ---
 BARYON NUMBER + 1 = 1
 2 * ISOSPIN PG = 1
 2 * SPIN QG = 1
 DOUBLETT KAPPA = 0

IS	IQ1	IQ2	IQ3	IQ4
2	3	3	2	1
IK1	IK2	IK3	IK4	N1
3	3	2	1	0
CS	KQ	EPS	QX	N
0	0	1	0	0
AM (MEV)	0.50688314Q+00			
*** NO EXCITATION POSSIBLE ***				
IS	IQ1	IQ2	IQ3	IQ4
2	3	3	2	1

IK1	IK2	IK3	IK4	N1	N2	N3	N4
3	3	2	1	0	0	0	0
CS	KQ	EPS	QX	N	AM (MEV)		
0	1	1	-1	0	0.51100326Q+00		
*** NO EXCITATION POSSIBLE ***							

=====

--- MU ---
 BARYON NUMBER + 1 = 1
 2 * ISOSPIN PG = 1
 2 * SPIN QG = 1
 DOUBLETT KAPPA = 1

IS	IQ1	IQ2	IQ3	IQ4
2	3	3	2	1
IK1	IK2	IK3	IK4	N1
14	9	13	7	11
CS	KQ	EPS	QX	N
0	1	1	-1	0
AM (MEV)	0.10565985Q+02			

CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	9	0.34431185Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
34	18	16	1	31	15	14	0	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	10	0.32987325Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
34	30	10	1	31	27	8	0	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	11	0.33670790Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
34	37	33	3	31	34	31	2	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	12	0.34480581Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
34	42	66	0	31	39	64	-1	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	13	0.35383541Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
34	46	91	2	31	43	89	1	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	14	0.36308605Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
34	50	39	8	31	47	37	7	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	15	0.36884896Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
34	53	27	1	31	50	25	0	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	16	0.37610759Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
34	55	81	1	31	52	79	0	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	17	0.38436946Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
34	57	100	0	31	54	98	-1	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	18	0.39194455Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
35	7	3	5	32	4	1	4	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	19	0.36760171Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
35	15	30	3	32	12	28	2	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	20	0.36905150Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
35	20	41	1	32	17	39	0	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	21	0.37094243Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
35	24	37	3	32	21	35	2	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	22	0.37270972Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
35	27	43	1	32	24	41	0	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	23	0.37483777Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
35	30	19	0	32	27	17	-1	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	24	0.37652425Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
35	32	34	2	32	29	32	1	

CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	33	0.39497796Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
35	44	58	7	32	41	56	6	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	34	0.39664150Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
35	45	48	1	32	42	46	0	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	35	0.39805401Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
35	46	33	2	32	43	31	1	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	36	0.39948587Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
35	47	12	0	32	44	10	-1	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	37	0.40112239Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
35	47	85	1	32	44	83	0	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	38	0.40437445Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
35	48	57	5	32	45	55	4	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	39	0.40472526Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
35	49	24	7	32	46	22	6	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	40	0.40575531Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
35	49	88	0	32	46	86	-1	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	41	0.40903538Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
35	50	49	6	32	47	47	5	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	42	0.40894614Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
35	51	5	6	32	48	3	5	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	43	0.41029239Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
35	51	63	1	32	48	61	0	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	44	0.41210645Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
35	52	13	0	32	49	11	-1	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	45	0.41289877Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
35	52	68	1	32	49	66	0	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	46	0.41494926Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
35	53	13	2	32	50	11	1	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	47	0.41554224Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
35	53	65	4	32	50	63	3	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	48	0.41741098Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
35	54	4	0	32	51	2	-1	

CS 0	KQ 1	EPS 1	QX -1	N 57	AM (MEV) 0.42724193Q+04		
IK1 35	IK2 57	IK3 60	IK4 0	N1 32	N2 54	N3 58	N4 -1
CS 0	KQ 1	EPS 1	QX -1	N 58	AM (MEV) 0.42871249Q+04		
IK1 35	IK2 57	IK3 100	IK4 1	N1 32	N2 54	N3 98	N4 0
CS 0	KQ 1	EPS 1	QX -1	N 59	AM (MEV) 0.43164006Q+04		
IK1 35	IK2 58	IK3 20	IK4 1	N1 32	N2 55	N3 18	N4 0
CS 0	KQ 1	EPS 1	QX -1	N 60	AM (MEV) 0.43040455Q+04		
IK1 35	IK2 58	IK3 58	IK4 0	N1 32	N2 55	N3 56	N4 -1
CS 0	KQ 1	EPS 1	QX -1	N 61	AM (MEV) 0.43176787Q+04		
IK1 35	IK2 58	IK3 96	IK4 4	N1 32	N2 55	N3 94	N4 3
CS 0	KQ 1	EPS 1	QX -1	N 62	AM (MEV) 0.43444829Q+04		
IK1 35	IK2 59	IK3 11	IK4 0	N1 32	N2 56	N3 9	N4 -1
CS 0	KQ 1	EPS 1	QX -1	N 63	AM (MEV) 0.43354631Q+04		
IK1 35	IK2 59	IK3 48	IK4 7	N1 32	N2 56	N3 46	N4 6
CS 0	KQ 1	EPS 1	QX -1	N 64	AM (MEV) 0.43456169Q+04		
IK1 35	IK2 59	IK3 83	IK4 1	N1 32	N2 56	N3 81	N4 0
CS 0	KQ 1	EPS 1	QX -1	N 65	AM (MEV) 0.43665567Q+04		
IK1 35	IK2 59	IK3 118	IK4 2	N1 32	N2 56	N3 116	N4 1
CS 0	KQ 1	EPS 1	QX -1	N 66	AM (MEV) 0.43986955Q+04		
IK1 35	IK2 60	IK3 29	IK4 1	N1 32	N2 57	N3 27	N4 0
CS 0	KQ 1	EPS 1	QX -1	N 67	AM (MEV) 0.43726811Q+04		
IK1 35	IK2 60	IK3 63	IK4 2	N1 32	N2 57	N3 61	N4 1
CS 0	KQ 1	EPS 1	QX -1	N 68	AM (MEV) 0.43870601Q+04		
IK1 35	IK2 60	IK3 96	IK4 1	N1 32	N2 57	N3 94	N4 0
CS 0	KQ 1	EPS 1	QX -1	N 69	AM (MEV) 0.44110457Q+04		
IK1 36	IK2 1	IK3 1	IK4 0	N1 33	N2 -2	N3 -1	N4 -1
CS 0	KQ 1	EPS 1	QX -1	N 70	AM (MEV) 0.41065692Q+04		
IK1 36	IK2 5	IK3 9	IK4 4	N1 33	N2 2	N3 7	N4 3
CS 0	KQ 1	EPS 1	QX -1	N 71	AM (MEV) 0.41075141Q+04		
IK1 36	IK2 6	IK3 0	IK4 1	N1 33	N2 5	N3 -2	N4 0
CS 0	KQ 1	EPS 1	QX -1	N 72	AM (MEV) 0.41084785Q+04		
IK1 36	IK2 9	IK3 14	IK4 2	N1 33	N2 6	N3 12	N4 1

AM (MEV)							
CS	KQ	EPS	QX	N			
0	1	1	-1	81	0.41265512Q+04		
IK1	IK2	IK3	IK4	N1	N2	N3	N4
36	18	28	7	33	15	26	6
AM (MEV)							
CS	KQ	EPS	QX	N			
0	1	1	-1	82	0.41301392Q+04		
IK1	IK2	IK3	IK4	N1	N2	N3	N4
36	19	17	1	33	16	15	0
AM (MEV)							
CS	KQ	EPS	QX	N			
0	1	1	-1	83	0.41311788Q+04		
IK1	IK2	IK3	IK4	N1	N2	N3	N4
36	20	4	1	33	17	2	0
AM (MEV)							
CS	KQ	EPS	QX	N			
0	1	1	-1	84	0.41336407Q+04		
IK1	IK2	IK3	IK4	N1	N2	N3	N4
36	20	31	0	33	17	29	-1
AM (MEV)							
CS	KQ	EPS	QX	N			
0	1	1	-1	85	0.41380487Q+04		
IK1	IK2	IK3	IK4	N1	N2	N3	N4
36	21	16	2	33	18	14	1
AM (MEV)							
CS	KQ	EPS	QX	N			
0	1	1	-1	86	0.41389425Q+04		
IK1	IK2	IK3	IK4	N1	N2	N3	N4
36	21	43	9	33	18	41	8
AM (MEV)							
CS	KQ	EPS	QX	N			
0	1	1	-1	87	0.41463695Q+04		
IK1	IK2	IK3	IK4	N1	N2	N3	N4
36	22	24	0	33	19	22	-1
AM (MEV)							
CS	KQ	EPS	QX	N			
0	1	1	-1	88	0.41449661Q+04		
IK1	IK2	IK3	IK4	N1	N2	N3	N4
36	23	4	1	33	20	2	0
AM (MEV)							
CS	KQ	EPS	QX	N			
0	1	1	-1	89	0.41473143Q+04		
IK1	IK2	IK3	IK4	N1	N2	N3	N4
36	23	30	2	33	20	28	1
AM (MEV)							
CS	KQ	EPS	QX	N			
0	1	1	-1	90	0.41514591Q+04		
IK1	IK2	IK3	IK4	N1	N2	N3	N4
36	24	7	1	33	21	5	0
AM (MEV)							
CS	KQ	EPS	QX	N			
0	1	1	-1	91	0.41528947Q+04		
IK1	IK2	IK3	IK4	N1	N2	N3	N4
36	24	33	13	33	21	31	12
AM (MEV)							
CS	KQ	EPS	QX	N			
0	1	1	-1	92	0.41578506Q+04		
IK1	IK2	IK3	IK4	N1	N2	N3	N4
36	25	7	1	33	22	5	0
AM (MEV)							
CS	KQ	EPS	QX	N			
0	1	1	-1	93	0.41587723Q+04		
IK1	IK2	IK3	IK4	N1	N2	N3	N4
36	25	32	1	33	22	30	0
AM (MEV)							
CS	KQ	EPS	QX	N			
0	1	1	-1	94	0.41633168Q+04		
IK1	IK2	IK3	IK4	N1	N2	N3	N4
36	26	4	1	33	23	2	0
AM (MEV)							
CS	KQ	EPS	QX	N			
0	1	1	-1	95	0.41649659Q+04		
IK1	IK2	IK3	IK4	N1	N2	N3	N4
36	26	29	3	33	23	27	2
AM (MEV)							
CS	KQ	EPS	QX	N			
0	1	1	-1	96	0.41688473Q+04		
IK1	IK2	IK3	IK4	N1	N2	N3	N4
36	26	53	0	33	23	51	-1

CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	105	0.41960852Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
36	30	34	2	33	27	32	1	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	106	0.42008933Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
36	30	57	4	33	27	55	3	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	107	0.42105280Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
36	31	16	0	33	28	14	-1	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	108	0.42057402Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
36	31	39	3	33	28	37	2	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	109	0.42116214Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
36	31	61	0	33	28	59	-1	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	110	0.42216914Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
45	64	86	0	42	61	84	-1	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	3252	0.10792750Q+05			
IS	IQ1	IQ2	IQ3	IQ4				
2	3	3	2	1				
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
14	9	13	7	11	6	11	6	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	0	0.10565945Q+03			
ILE	IL1	IL2	IL3	IL4				
3252	42	61	89	88				
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
29	21	8	3	26	18	6	2	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	2	0.17833926Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
30	47	28	0	27	44	26	-1	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	3	0.23414777Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
31	48	93	8	28	45	91	7	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	4	0.26750683Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
32	39	21	2	29	36	19	1	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	5	0.27763355Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
32	55	82	7	29	52	80	6	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	6	0.31478985Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
33	34	48	1	30	31	46	0	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	7	0.30531624Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
33	46	67	10	30	43	65	9	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	8	0.32497082Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
33	54	69	0	30	51	67	-1	
CS	KQ	EPS	QX	N	AM (MEV)			
0	1	1	-1	9	0.34431185Q+04			

0.364535460.04							
IK1	IK2	IK3	IK4	N1	N2	N3	N4
34	57	100	0	31	54	98	-1
CS	KQ	EPS	QX	N	AM (MEV)		
0	1	1	-1	18	0.39194455Q+04		
IK1	IK2	IK3	IK4	N1	N2	N3	N4
35	7	3	5	32	4	1	4
CS	KQ	EPS	QX	N	AM (MEV)		
0	1	1	-1	19	0.36760171Q+04		
IK1	IK2	IK3	IK4	N1	N2	N3	N4
35	15	30	3	32	12	28	2
CS	KQ	EPS	QX	N	AM (MEV)		
0	1	1	-1	20	0.36905150Q+04		
IK1	IK2	IK3	IK4	N1	N2	N3	N4
35	20	41	1	32	17	39	0
CS	KQ	EPS	QX	N	AM (MEV)		
0	1	1	-1	21	0.37094243Q+04		
IK1	IK2	IK3	IK4	N1	N2	N3	N4
35	24	37	3	32	21	35	2
CS	KQ	EPS	QX	N	AM (MEV)		
0	1	1	-1	22	0.37270972Q+04		
IK1	IK2	IK3	IK4	N1	N2	N3	N4
35	27	43	1	32	24	41	0
CS	KQ	EPS	QX	N	AM (MEV)		
0	1	1	-1	23	0.37483777Q+04		
IK1	IK2	IK3	IK4	N1	N2	N3	N4
35	30	19	0	32	27	17	-1
CS	KQ	EPS	QX	N	AM (MEV)		
0	1	1	-1	24	0.37652425Q+04		
IK1	IK2	IK3	IK4	N1	N2	N3	N4
35	32	34	2	32	29	32	1
CS	KQ	EPS	QX	N	AM (MEV)		
0	1	1	-1	25	0.37876093Q+04		
IK1	IK2	IK3	IK4	N1	N2	N3	N4
35	34	31	0	32	31	29	-1
CS	KQ	EPS	QX	N	AM (MEV)		
0	1	1	-1	26	0.38078032Q+04		
IK1	IK2	IK3	IK4	N1	N2	N3	N4
35	36	12	1	32	33	10	0
CS	KQ	EPS	QX	N	AM (MEV)		
0	1	1	-1	27	0.38277211Q+04		
IK1	IK2	IK3	IK4	N1	N2	N3	N4
35	37	55	3	32	34	53	2
CS	KQ	EPS	QX	N	AM (MEV)		
0	1	1	-1	28	0.38539020Q+04		
IK1	IK2	IK3	IK4	N1	N2	N3	N4
35	39	9	1	32	36	7	0
CS	KQ	EPS	QX	N	AM (MEV)		
0	1	1	-1	29	0.38681786Q+04		
IK1	IK2	IK3	IK4	N1	N2	N3	N4
35	40	33	1	32	37	31	0
CS	KQ	EPS	QX	N	AM (MEV)		
0	1	1	-1	30	0.38879151Q+04		
IK1	IK2	IK3	IK4	N1	N2	N3	N4
35	41	49	0	32	38	47	-1
CS	KQ	EPS	QX	N	AM (MEV)		
0	1	1	-1	31	0.39097493Q+04		
IK1	IK2	IK3	IK4	N1	N2	N3	N4
35	42	59	6	32	39	57	5
CS	KQ	EPS	QX	N	AM (MEV)		
0	1	1	-1	32	0.39313474Q+04		
IK1	IK2	IK3	IK4	N1	N2	N3	N4
35	43	61	0	32	40	59	-1
CS	KQ	EPS	QX	N	AM (MEV)		
0	1	1	-1	33	0.39497796Q+04		

IK1 35	IK2 50	IK3 49	IK4 6	N1 32	N2 47	N3 47	N4 5
CS 0	KQ 1	EPS 1	QX -1	N 42	AM (MEV) 0.40894614Q+04		
IK1 35	IK2 51	IK3 5	IK4 6	N1 32	N2 48	N3 3	N4 5
CS 0	KQ 1	EPS 1	QX -1	N 43	AM (MEV) 0.41029239Q+04		
IK1 35	IK2 51	IK3 63	IK4 1	N1 32	N2 48	N3 61	N4 0
CS 0	KQ 1	EPS 1	QX -1	N 44	AM (MEV) 0.41210645Q+04		
IK1 35	IK2 52	IK3 13	IK4 0	N1 32	N2 49	N3 11	N4 -1
CS 0	KQ 1	EPS 1	QX -1	N 45	AM (MEV) 0.41289877Q+04		
IK1 35	IK2 52	IK3 68	IK4 1	N1 32	N2 49	N3 66	N4 0
CS 0	KQ 1	EPS 1	QX -1	N 46	AM (MEV) 0.41494926Q+04		
IK1 35	IK2 53	IK3 13	IK4 2	N1 32	N2 50	N3 11	N4 1
CS 0	KQ 1	EPS 1	QX -1	N 47	AM (MEV) 0.41554224Q+04		
IK1 35	IK2 53	IK3 65	IK4 4	N1 32	N2 50	N3 63	N4 3
CS 0	KQ 1	EPS 1	QX -1	N 48	AM (MEV) 0.41741098Q+04		
IK1 35	IK2 54	IK3 4	IK4 0	N1 32	N2 51	N3 2	N4 -1
CS 0	KQ 1	EPS 1	QX -1	N 49	AM (MEV) 0.41820901Q+04		
IK1 35	IK2 54	IK3 53	IK4 0	N1 32	N2 51	N3 51	N4 -1
CS 0	KQ 1	EPS 1	QX -1	N 50	AM (MEV) 0.41950055Q+04		
IK1 35	IK2 54	IK3 101	IK4 1	N1 32	N2 51	N3 99	N4 0
CS 0	KQ 1	EPS 1	QX -1	N 51	AM (MEV) 0.42288258Q+04		
IK1 35	IK2 55	IK3 35	IK4 2	N1 32	N2 52	N3 33	N4 1
CS 0	KQ 1	EPS 1	QX -1	N 52	AM (MEV) 0.42161913Q+04		
IK1 35	IK2 55	IK3 80	IK4 0	N1 32	N2 52	N3 78	N4 -1
CS 0	KQ 1	EPS 1	QX -1	N 53	AM (MEV) 0.42398950Q+04		
IK1 35	IK2 56	IK3 10	IK4 3	N1 32	N2 53	N3 8	N4 2
CS 0	KQ 1	EPS 1	QX -1	N 54	AM (MEV) 0.42404658Q+04		
IK1 35	IK2 56	IK3 53	IK4 1	N1 32	N2 53	N3 51	N4 0
CS 0	KQ 1	EPS 1	QX -1	N 55	AM (MEV) 0.42529536Q+04		
IK1 35	IK2 56	IK3 95	IK4 0	N1 32	N2 53	N3 93	N4 -1
CS 0	KQ 1	EPS 1	QX -1	N 56	AM (MEV) 0.42813838Q+04		
IK1 35	IK2 57	IK3 20	IK4 2	N1 32	N2 54	N3 18	N4 1
CS 0	KQ 1	EPS 1	QX -1	N 57	AM (MEV) 0.42724193Q+04		

IK1 35	IK2 59	IK3 118	IK4 2	N1 32	N2 56	N3 116	N4 1
CS 0	KQ 1	EPS 1	QX -1	N 66	AM (MEV) 0.43986955Q+04		
IK1 35	IK2 60	IK3 29	IK4 1	N1 32	N2 57	N3 27	N4 0
CS 0	KQ 1	EPS 1	QX -1	N 67	AM (MEV) 0.43726811Q+04		
IK1 35	IK2 60	IK3 63	IK4 2	N1 32	N2 57	N3 61	N4 1
CS 0	KQ 1	EPS 1	QX -1	N 68	AM (MEV) 0.43870601Q+04		
IK1 35	IK2 60	IK3 96	IK4 1	N1 32	N2 57	N3 94	N4 0
CS 0	KQ 1	EPS 1	QX -1	N 69	AM (MEV) 0.44110457Q+04		
IK1 36	IK2 1	IK3 1	IK4 0	N1 33	N2 -2	N3 -1	N4 -1
CS 0	KQ 1	EPS 1	QX -1	N 70	AM (MEV) 0.41065692Q+04		
IK1 36	IK2 5	IK3 9	IK4 4	N1 33	N2 2	N3 7	N4 3
CS 0	KQ 1	EPS 1	QX -1	N 71	AM (MEV) 0.41075141Q+04		
IK1 36	IK2 8	IK3 0	IK4 1	N1 33	N2 5	N3 -2	N4 0
CS 0	KQ 1	EPS 1	QX -1	N 72	AM (MEV) 0.41084785Q+04		
IK1 36	IK2 9	IK3 14	IK4 2	N1 33	N2 6	N3 12	N4 1
CS 0	KQ 1	EPS 1	QX -1	N 73	AM (MEV) 0.41102038Q+04		
IK1 36	IK2 11	IK3 4	IK4 8	N1 33	N2 8	N3 2	N4 7
CS 0	KQ 1	EPS 1	QX -1	N 74	AM (MEV) 0.41114744Q+04		
IK1 36	IK2 12	IK3 10	IK4 0	N1 33	N2 9	N3 8	N4 -1
CS 0	KQ 1	EPS 1	QX -1	N 75	AM (MEV) 0.41131633Q+04		
IK1 36	IK2 13	IK3 15	IK4 8	N1 33	N2 10	N3 13	N4 7
CS 0	KQ 1	EPS 1	QX -1	N 76	AM (MEV) 0.41154177Q+04		
IK1 36	IK2 14	IK3 16	IK4 0	N1 33	N2 11	N3 14	N4 -1
CS 0	KQ 1	EPS 1	QX -1	N 77	AM (MEV) 0.41173320Q+04		
IK1 36	IK2 15	IK3 16	IK4 3	N1 33	N2 12	N3 14	N4 2
CS 0	KQ 1	EPS 1	QX -1	N 78	AM (MEV) 0.41194758Q+04		
IK1 36	IK2 16	IK3 13	IK4 4	N1 33	N2 13	N3 11	N4 3
CS 0	KQ 1	EPS 1	QX -1	N 79	AM (MEV) 0.41214835Q+04		
IK1 36	IK2 17	IK3 7	IK4 0	N1 33	N2 14	N3 5	N4 -1
CS 0	KQ 1	EPS 1	QX -1	N 80	AM (MEV) 0.41235916Q+04		
IK1 36	IK2 18	IK3 0	IK4 18	N1 33	N2 15	N3 -2	N4 17
CS 0	KQ 1	EPS 1	QX -1	N 81	AM (MEV) 0.41265512Q+04		

IK1 36	IK2 23	IK3 30	IK4 2	N1 33	N2 20	N3 28	N4 1
CS 0	KQ 1	EPS 1	QX -1	N 90	AM (MEV) 0.41514591Q+04		
IK1 36	IK2 24	IK3 7	IK4 1	N1 33	N2 21	N3 5	N4 0
CS 0	KQ 1	EPS 1	QX -1	N 91	AM (MEV) 0.41528947Q+04		
IK1 36	IK2 24	IK3 33	IK4 13	N1 33	N2 21	N3 31	N4 12
CS 0	KQ 1	EPS 1	QX -1	N 92	AM (MEV) 0.41578506Q+04		
IK1 36	IK2 25	IK3 7	IK4 1	N1 33	N2 22	N3 5	N4 0
CS 0	KQ 1	EPS 1	QX -1	N 93	AM (MEV) 0.41587723Q+04		
IK1 36	IK2 25	IK3 32	IK4 1	N1 33	N2 22	N3 30	N4 0
CS 0	KQ 1	EPS 1	QX -1	N 94	AM (MEV) 0.41633168Q+04		
IK1 36	IK2 26	IK3 4	IK4 1	N1 33	N2 23	N3 2	N4 0
CS 0	KQ 1	EPS 1	QX -1	N 95	AM (MEV) 0.41649659Q+04		
IK1 36	IK2 26	IK3 29	IK4 3	N1 33	N2 23	N3 27	N4 2
CS 0	KQ 1	EPS 1	QX -1	N 96	AM (MEV) 0.41688473Q+04		
IK1 36	IK2 26	IK3 53	IK4 0	N1 33	N2 23	N3 51	N4 -1
CS 0	KQ 1	EPS 1	QX -1	N 97	AM (MEV) 0.41778720Q+04		
IK1 36	IK2 27	IK3 23	IK4 4	N1 33	N2 24	N3 21	N4 3
CS 0	KQ 1	EPS 1	QX -1	N 98	AM (MEV) 0.41742670Q+04		
IK1 36	IK2 27	IK3 47	IK4 3	N1 33	N2 24	N3 45	N4 2
CS 0	KQ 1	EPS 1	QX -1	N 99	AM (MEV) 0.41820015Q+04		
IK1 36	IK2 28	IK3 14	IK4 3	N1 33	N2 25	N3 12	N4 2
CS 0	KQ 1	EPS 1	QX -1	N 100	AM (MEV) 0.41800764Q+04		
IK1 36	IK2 28	IK3 38	IK4 8	N1 33	N2 25	N3 36	N4 7
CS 0	KQ 1	EPS 1	QX -1	N 101	AM (MEV) 0.41859034Q+04		
IK1 36	IK2 29	IK3 2	IK4 1	N1 33	N2 26	N3 0	N4 0
CS 0	KQ 1	EPS 1	QX -1	N 102	AM (MEV) 0.41870396Q+04		
IK1 36	IK2 29	IK3 26	IK4 7	N1 33	N2 26	N3 24	N4 6
CS 0	KQ 1	EPS 1	QX -1	N 103	AM (MEV) 0.41902583Q+04		
IK1 36	IK2 29	IK3 49	IK4 3	N1 33	N2 26	N3 47	N4 2
CS 0	KQ 1	EPS 1	QX -1	N 104	AM (MEV) 0.41981649Q+04		
IK1 36	IK2 30	IK3 11	IK4 2	N1 33	N2 27	N3 9	N4 1
CS 0	KQ 1	EPS 1	QX -1	N 105	AM (MEV) 0.41960852Q+04		

CS	KQ	EPS	QX	N	AM (MEV)			
0	0	1	0	0	0.54880708Q+03			
ILE	IL1	IL2	IL3	IL4				
2488	58	84	120	121				
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
23	28	26	1	20	25	24	0	
CS	KQ	EPS	QX	N	AM (MEV)			
0	0	1	0	2	0.78237027Q+03			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
23	39	56	2	20	36	54	1	
CS	KQ	EPS	QX	N	AM (MEV)			
0	0	1	0	3	0.91305941Q+03			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
24	20	26	2	21	17	24	1	
CS	KQ	EPS	QX	N	AM (MEV)			
0	0	1	0	4	0.86577840Q+03			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
24	28	26	0	21	25	24	-1	
CS	KQ	EPS	QX	N	AM (MEV)			
0	0	1	0	5	0.91074690Q+03			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
24	33	31	1	21	30	29	0	
CS	KQ	EPS	QX	N	AM (MEV)			
0	0	1	0	6	0.95682058Q+03			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
24	37	11	1	21	34	9	0	
CS	KQ	EPS	QX	N	AM (MEV)			
0	0	1	0	7	0.99969019Q+03			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
24	40	6	5	21	37	4	4	
CS	KQ	EPS	QX	N	AM (MEV)			
0	0	1	0	8	0.10417054Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
25	2	1	1	22	-1	-1	0	
CS	KQ	EPS	QX	N	AM (MEV)			
0	0	1	0	9	0.98102296Q+03			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
25	13	18	5	22	10	16	4	
CS	KQ	EPS	QX	N	AM (MEV)			
0	0	1	0	10	0.99019869Q+03			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
25	18	30	3	22	15	28	2	
CS	KQ	EPS	QX	N	AM (MEV)			
0	0	1	0	11	0.10048910Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
25	22	26	6	22	19	24	5	
CS	KQ	EPS	QX	N	AM (MEV)			
0	0	1	0	12	0.10195183Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
25	25	31	0	22	22	29	-1	
CS	KQ	EPS	QX	N	AM (MEV)			
0	0	1	0	13	0.10368760Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
25	28	12	4	22	25	10	3	
CS	KQ	EPS	QX	N	AM (MEV)			
0	0	1	0	14	0.10533608Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
25	30	29	1	22	27	27	0	
CS	KQ	EPS	QX	N	AM (MEV)			
0	0	1	0	15	0.10728174Q+04			
IK1	IK2	IK3	IK4	N1	N2	N3	N4	
25	32	33	0	22	29	31	-1	
CS	KQ	EPS	QX	N	AM (MEV)			
0	0	1	0	16	0.10924134Q+04			

IK1 26	IK2 11	IK3 5	IK4 2	N1 23	N2 8	N3 3	N4 1
CS 0	KQ 0	EPS 1	QX 0	N 25	AM (MEV) 0.11490465Q+04		
IK1 26	IK2 15	IK3 5	IK4 1	N1 23	N2 12	N3 3	N4 0
CS 0	KQ 0	EPS 1	QX 0	N 26	AM (MEV) 0.11558540Q+04		
IK1 26	IK2 18	IK3 9	IK4 1	N1 23	N2 15	N3 7	N4 0
CS 0	KQ 0	EPS 1	QX 0	N 27	AM (MEV) 0.11642032Q+04		
IK1 26	IK2 20	IK3 35	IK4 0	N1 23	N2 17	N3 33	N4 -1
CS 0	KQ 0	EPS 1	QX 0	N 28	AM (MEV) 0.11766945Q+04		
IK1 26	IK2 23	IK3 7	IK4 0	N1 23	N2 20	N3 5	N4 -1
CS 0	KQ 0	EPS 1	QX 0	N 29	AM (MEV) 0.11846071Q+04		
IK1 26	IK2 25	IK3 12	IK4 4	N1 23	N2 22	N3 10	N4 3
CS 0	KQ 0	EPS 1	QX 0	N 30	AM (MEV) 0.11962626Q+04		
IK1 26	IK2 27	IK3 7	IK4 0	N1 23	N2 24	N3 5	N4 -1
CS 0	KQ 0	EPS 1	QX 0	N 31	AM (MEV) 0.12088095Q+04		
IK1 26	IK2 28	IK3 51	IK4 1	N1 23	N2 25	N3 49	N4 0
CS 0	KQ 0	EPS 1	QX 0	N 32	AM (MEV) 0.12281547Q+04		
IK1 26	IK2 30	IK3 33	IK4 0	N1 23	N2 27	N3 31	N4 -1
CS 0	KQ 0	EPS 1	QX 0	N 33	AM (MEV) 0.12372097Q+04		
IK1 26	IK2 32	IK3 7	IK4 1	N1 23	N2 29	N3 5	N4 0
CS 0	KQ 0	EPS 1	QX 0	N 34	AM (MEV) 0.12507040Q+04		
IK1 26	IK2 33	IK3 39	IK4 0	N1 23	N2 30	N3 37	N4 -1
CS 0	KQ 0	EPS 1	QX 0	N 35	AM (MEV) 0.12677924Q+04		
IK1 26	IK2 35	IK3 0	IK4 2	N1 23	N2 32	N3 -2	N4 1
CS 0	KQ 0	EPS 1	QX 0	N 36	AM (MEV) 0.12826797Q+04		
IK1 26	IK2 36	IK3 25	IK4 1	N1 23	N2 33	N3 23	N4 0
CS 0	KQ 0	EPS 1	QX 0	N 37	AM (MEV) 0.12977249Q+04		
IK1 26	IK2 37	IK3 48	IK4 2	N1 23	N2 34	N3 46	N4 1
CS 0	KQ 0	EPS 1	QX 0	N 38	AM (MEV) 0.13183518Q+04		
IK1 26	IK2 38	IK3 68	IK4 0	N1 23	N2 35	N3 66	N4 -1
CS 0	KQ 0	EPS 1	QX 0	N 39	AM (MEV) 0.13426099Q+04		
IK1 26	IK2 40	IK3 7	IK4 0	N1 23	N2 37	N3 5	N4 -1
CS 0	KQ 0	EPS 1	QX 0	N 40	AM (MEV) 0.13500675Q+04		
IK1 26	IK2 42	IK3 1	IK4 0	N1 23	N2 39	N3 7	N4 -1

Anstiegsprinzip der Konfigurationszonen:

$$n_4 + Q_4 \leq (n_3 + Q_3) \alpha_3 \leq (n_2 + Q_2) \alpha_2 \leq (n_1 + Q_1) \alpha_1.$$

Auswahlregel der Konfigurationszonenbesetzungen

$$(n_1 + Q_1) \alpha_1 + (n_2 + Q_2) \alpha_2 + (n_3 + Q_3) \alpha_3 + \exp\left(\frac{1-2k}{3Q_4} (n_4 + Q_4)\right) + iF(\Gamma) = \\ = W_{yx} \left[1 + (1-Q)(2-k)(1-Q) \left(a_{yx} \frac{N}{N+2} + b_{yx} \sqrt{N(N-2)} \right) \right].$$

$$W_{yx} = g(kq) w_{yx}, \text{ Basisanstieg } g(kq) = Q_1^3 \alpha_1 + Q_2^3 \alpha_2 + Q_3^3 \alpha_3 + \exp\left(\frac{1-2k}{3}\right)$$

für $n_j = 0$. Strukturpotenz des diskutierten Zustandes

$x_{yx} (kPQ) \in C(q_x)$ als Komponente x des Multipletts y ist:

$$w_{yx} = \left[(1-Q)(A_{11} - P(A_{12} + \frac{q}{\eta_{qk}} A_{13}) - \left(\frac{P}{2}\right)(A_{14} - \frac{q}{\eta_{qk}} A_{15})) + Q \eta_{qk} A_{16} \right]^{2-k} + \\ + \left[(q-1)A_{21} + (1-P)A_{22} + \left(\frac{P}{2}\right)(A_{23} - q_x \eta_{qk} (1+A_{24}(1+q_x))^{-1} A_{25}) + \right. \\ \left. + Q(A_{26} + q \eta_{qk}^2 A_{31}) + \left(\frac{Q}{3}\right) \eta_{qk} A_{32} + \left(\frac{P}{3}\right) \left\{ \frac{q^3 A_{33}}{3-q} (q_x - (-1)^q) + \right. \right. \\ \left. \left. + \frac{e(P-Q) \eta_{qk} (q-1) q/4}{8-A_{66} q(q-1)} \left(1 - \frac{q}{\eta_{qk}} (2-q) A_{34}^{1-q_x} A_{35} \frac{\eta_{qk}}{\eta^2} - A_{36} \right) \right\} \right]^{k-1}.$$

gilt als Resonanzbasis $ka_{yx} = A_{41}(1+a_n a_q)$ mit

$$a_n = PA_{42} \left[1 - Q A_{43} (1+A_{44} (-\alpha)^{2-k} A_{45}^{k-1}) (1-Q A_{46} (2-k)) - A_{51} (k-1) (1-Q) \right] \\ \text{und } a_q = 1 - q A_{52} (1-2Q A_{53}^k) \left(1 + \frac{q_x}{6} (3-q_x) (k-1) (1-Q) \right). \text{ Resonanz-} \\ \text{raster ist } k^P (1+P+Q+Q \eta^{2-q}) b_{yx} = A_{54} A_{55}^{k-1} \left[1 + PA_{56} (1-Q A_{61} A_{62}^{1-k}) (1+ \right. \\ \left. + q A_{63} (1+Q A_{64})) \right] (1-k^{-1} (A_{65} (q+k-1))^{2-k} \left(\frac{P}{2}\right) (1-\left(\frac{P}{3}\right))). \text{ Die Koeffizienten}$$

A_{rs} können als Elemente der quadratischen Koeffizientenmatrix

$\hat{A} = (A_{rs})_6$ mit $A_{rs} + A_{sr}$ und $\text{Im} A_{rs} = 0$ aufgefaßt werden.

Vorschlag zur Bestimmung der Matrixelemente (Reduktion auf π, e und ξ):

$$2\eta^2 A_{11} = \xi^2 (\pi e \xi)^2 (1-4\pi \alpha^2), 3A_{12} = 2\pi e \xi^2 \left(\frac{3}{8} - \pi e \eta \frac{\alpha^2}{\xi} \right), A_{13} = \\ = 3(4+\eta \alpha) \left(1 - \frac{\eta^2 (1-\sqrt{\eta})}{5} \right), \alpha A_{14} = 1 + \frac{3\eta}{4\xi} (2\eta \alpha - e^2 \xi \left(\frac{1-\sqrt{\eta}}{1+\sqrt{\eta}} \right)^2), \\ 3A_{15} = e^2 (1-2e \frac{\alpha^2}{\eta}), A_{16} = (\pi e)^2 (1 + \frac{\alpha}{5\eta} (1+6\frac{\alpha}{\pi})), A_{21} = 2 \left(\frac{e\alpha}{2\eta} \right)^2 (1 - \frac{\alpha}{2\xi}), \\ 12A_{22} = \xi (1 - \xi \left(\frac{\alpha}{\eta} \right)^2), e A_{23} = \eta^2 + 6\xi \alpha^2, 3\eta A_{24} = 2\xi^2, \\ A_{25} = \xi (\pi e)^2 (1-\beta^2), e \xi^2 A_{26} = 2(1 - \frac{\pi}{2} (e \xi \alpha)^2 \sqrt{\eta}),$$

* siehe Bemerkung

S. 4 a

Anmerkung zu Seit 4, Zeile 9 bis Zeile 12:

$$w(1) = (1-Q) \left[A_{11} - P \left(A_{12} + \frac{Q}{\eta_{qk}} A_{13} \right) - \left(\frac{P}{2} \right) \left(A_{14} - \frac{Q}{\eta_{qk}} A_{15} \right) \right] + Q \eta_{qk} A_{16}$$

$$\text{und } w(2) = (q-1) A_{21} + (1-P) A_{22} + \left(\frac{P}{2} \right) \left[A_{23} - \frac{Q}{\eta_{qk}} A_{25} (1 + A_{24} (1 + q_x))^{-1} \right] + Q (A_{26} + \frac{Q}{\eta_{qk}} A_{31}) + \left(\frac{Q}{3} \right) \eta_{qk} A_{32} + \left(\frac{P}{3} \right) \left\{ \frac{Q}{3-Q} A_{33} (q_x - (-1)^q) + \right.$$

$$\left. + \frac{e(P-Q)\eta(q-1)q/4}{8-A_{66}q(q-1)} \left(1 - \frac{Q}{\eta_{qk}} (2-q) A_{34}^{1-q} A_{35} \right) \frac{\eta_{qk}}{\eta^2} - A_{36} \right\}$$

in $w_{yx} = [w(1)]^{2-k} + [w(2)]^{k-1}$ können für einzelne Quantenzah-
lensätze bei $k=1$ zu $w(2)=0$ oder bei $k=2$ zu $w(1)=0$ werden,
was zu uneigentlichen Termen 0^0 führt, die aber als Struk-
turpotenzanteile stets den Wert 1 haben müssen. Aus diesem
Grunde ist es bei der Programmierung zu empfehlen, $w(1)$ und $w(2)$
durch die numerisch nicht relevanten Summanden $k-1$ und $2-k$
zu ergänzen. Da stets $w(1) \neq -1$ und $w(2) \neq -1$ bleiben,
aber nur $k=1$ oder $k=2$ möglich ist, erscheinen in der
Fassung

$$w_{yx}(k) = [k-1+w(1)]^{2-k} + [2-k+w(2)]^{k-1}$$

die uneigentlichen Terme nicht mehr. Für mesonische Strukturen
wird $w_{yx}(k=1)=1+w(1)$ und für barionische Strukturen
 $w_{yx}(k=2)=1+w(2)$ nach dieser Korrektur sofort deutlich.

$$\begin{aligned} A_{31} &= (\pi e \alpha)^2 (1 - (\pi e)^2 (1 - \beta^2)), & 6A_{32} &= \xi^2 (1 + (2e \frac{\alpha}{\eta})^2), \\ A_{33} &= (\pi e \xi \alpha)^2 (1 - 2\pi (e \xi)^2 (1 - \beta^2)), & A_{34} &= \eta \sqrt{2\pi \eta}, & e \xi^2 A_{35} &= 3\alpha, \\ A_{36} &= (1 - \pi e (\xi e)^2 (1 - \beta^2))^{-1}, & A_{41} (2\beta - \alpha) &= \xi (2 + (\xi \alpha)^2) - 2\beta \xi \beta, \\ 2A_{42} &= \pi \xi^2 \eta (\beta - 3\alpha), & 2A_{43} &= \xi, & A_{44} &= 2(\frac{\eta}{\xi})^2, & 6 \xi A_{45} &= 3\beta - \alpha, \\ A_{46} &= \frac{\pi e}{\xi \eta} - e \eta^2 \frac{\alpha}{2}, & A_{51} &= (2\alpha + 1)^2, & \eta^2 A_{52} &= 6\alpha, & A_{53} &= (\frac{\xi}{\eta})^3, \\ A_{54} &= \alpha (\beta - \alpha) \sqrt{3/2}, & A_{55} &= \xi^3, & A_{56} &= (\frac{\xi}{\eta})^4, & 12\beta A_{61} &= \pi \xi (2\beta - \alpha), \\ 12A_{62} &= \pi^2 (\beta - 2\alpha), & 9A_{63} &= \sqrt{\eta}, & 3\eta A_{64} &= \pi, & 3 \xi A_{65} &= \pi, & A_{66} &= \xi \eta. \end{aligned}$$

Die Resonanzordnung $N \geq 0$ (positiv ganzzahlig) wählt die zugelassenen Quadrupel n_j mit $1 \leq j \leq 4$. Mit der Kürzung $f(N) = (1 - Q(2-k)(1-\mathcal{R})) (a_{yx} \frac{N}{N+2} + b_{yx} \sqrt{N(N-2)})$ folgt, daß die unbekannte Funktion $F(\Gamma) = 0$ für alle $N \neq 1$ bleibt (rechte Seite ist reell). Im Fall $N=0$ wird $f=0$, so daß $(n_1+Q_1)^3 \alpha_1 + (n_2+Q_2)^2 \alpha_2 + (n_3+Q_3) \alpha_3 + \exp(\frac{1-2k}{3Q_4}(n_4+Q_4)) = W_{yx}$ die n_j des Zustandes x_{yx} und damit die Masse $M_0(x)$ der Komponente x des Multipletts x_y beschreibt. Die $N \neq 2$ ordnen x_{yx} ein Spektrum von Besetzungsparameterquadrupeln und damit nach der Massenformel Resonanzmassen $M_N(x)$ zu (für jede Komponente x_{yx} also ein Massenspektrum). Im Fall $N=1$ kein Spektralterm. Hier ist nicht $f(N) \geq 0$, es ist $f(1)$ komplex. Realteil: $(n_1+Q_1)^3 \alpha_1 + (n_2+Q_2)^2 \alpha_2 + (n_3+Q_3) \alpha_3 + \exp(\frac{1-2k}{3Q_4}(n_4+Q_4)) = W_{yx} (1 + (1 - Q(2-k)(1-\mathcal{R})) a_{yx}/3)$. Imaginärteil $F(\Gamma) = W_{yx} (1 - Q(2-k)(1-\mathcal{R})) b_{yx}$. Die n_j und $F(\Gamma)$ stehen mit N in irgendeiner Beziehung zu den vollen Bandbreiten Γ . Auch muß es einen Zusammenhang $Q_N = Q(N)$ zwischen doppelter Spinquantenzahl Q und N geben. Wie könnten diese Zusammenhänge beschaffen sein??

Wird $N=1$ ausgeschlossen, dann $F=0$ und reelle Beziehung $(n_1+Q_1)^3 \alpha_1 + (n_2+Q_2)^2 \alpha_2 + (n_3+Q_3) \alpha_3 + \exp(\frac{1-2k}{3Q_4}(n_4+Q_4)) = W_{yx} (1+f)$ diskutieren. Im allgemeinen $f > 0$ für $N \geq 2$ und $f=0$ für $N=0$. Im Fall des Multipletts x_2 jedoch $f=0$ für alle $N \geq 0$, weil hier allein $Q(2-k)(1-\mathcal{R})=1$ ist. Elektronen sind nach diesem Bild nicht anregbar! Bei numerischer Bestimmung von W_{yx}, a_{yx}, b_{yx} und ϕ_{yx} (Quantenzahlenfunktion im Massenspektrum M) nicht $Q_N = Q(N)$ sondern $Q=Q(0)$ des x_y verwenden. Zur Bestimmung der n_j wird das Anstiegsprinzip der Konfigurationszonenbesetzungen berücksichtigt. Zunächst für eine Resonanzordnung

$N=0$ oder $N \geq 2$ die rechte Seite $W_{\alpha x}(1+f(N))=W_1$ numerisch bestimmen. Nach der Auswahlregel die maximale Kubikzahl K_1^3 feststellen, deren Produkt mit α_1 noch in W_1 enthalten ist. Dann $W_1 - \alpha_1 K_1^3 = W_2 \geq 0$ einsetzen in $(n_2+Q_2)^2 \alpha_2 + (n_3+Q_3) \alpha_3 + \exp(\frac{1-2k}{3Q_4}(n_4+Q_4)) = W_2$. Jetzt maximale Quadratzahl K_2^2 derart, daß $\alpha_2 K_2^2$ noch in W_2 enthalten ist, also $W_2 - \alpha_2 K_2^2 = W_3 \geq 0$. Ganz entsprechend in $(n_3+Q_3) \alpha_3 + \exp(\frac{1-2k}{3Q_4}(n_4+Q_4)) = W_3$ maximale Zahl K_3 im Sinne $W_3 - \alpha_3 K_3 = W_4 \geq 0$ bestimmen. Für W_4 drei Möglichkeiten: (a) $W_4=0$, (b) $0 < W_4 \leq 1$, (c) $W_4 > 1$. Allgemeiner Fall (b): $\ln W_4 \leq 0$ und

$K_4((2k-1) - 3Q_4 \ln W_4)$. Im Fall (c) ist $\ln W_4 > 0$ und $K_4 < 0$. Dies ist unmöglich weil stets $n_j + Q_j \geq 0$ bleiben muß. Wegen $n_4 + Q_4 \leq (n_3+Q_3) \alpha_3$ des Anstiegsprinzips wird dann K_3 um 1 vermindert und $\alpha_3 K_3$ zu $K_4 < 0$ addiert, so daß ein neuer Wert $K_4 \geq 0$ entsteht. Im Fall (a) hätte $W_4 \rightarrow 0$ die Divergenz $K_4 \rightarrow \infty$ zur Folge doch ist dies wegen $K_4 \leq \alpha_3 K_3$ unmöglich (zumal es divergierende Selbstenergiepotentiale nicht gibt). Aus diesem Grunde wird im Fall (a) der maximale Wert $K_4 = \alpha_3 K_3$ berechnet. Aus den ermittelten K_j folgt $n_j = K_j - Q_j$. Es ist zwar neben $n_j \geq 0$ auch $n_j < 0$ möglich, doch gilt stets $K_j \geq 0$, also $n_j \geq -Q_j$. Die so ermittelte Quadrupel n_j wird mit $\phi_{\alpha x}$ in das Massenspektrum eingesetzt, was numerisch $M_N(\alpha x)$ als Spektralterm des Massenspektrums zu $x_{\alpha x}$ liefert.

Vermerk: Die K_j sind stets ganzzahlig. Im Fall der Bestimmung von K_4 treten jedoch regelmäßig Dezimalstellen auf. Im Fall der Dezimalstellen ,99...99 muss die Identität ,99...99 = 1 verwendet werden. Ist dagegen die Folge der Dezimalstellen von diesem Wert verschieden, dann darf nicht aufgerundet werden. Die Dezimalstellen sind abzuschneiden, weil die K_j die Anzahlen von Strukturentitäten sind.

* was $K_3 > 0$ voraussetzt; denn im Fall $K_3 = 0$ kann diese Dilation wegen des quadratischen Anstieges von $j=2$ nicht erfolgen, so daß diese Resonanzordnung N für $x_{\alpha x}$ nicht existiert (verbotener Term).

Grenzen der Resonanzspektren:

Allgemeines Bauprinzip der Konfigurationszonen $n_4+Q_4 \leq (n_3+Q_3)\alpha_3$,
 $\alpha_3(n_3+Q_3)(1+n_3+Q_3) \leq 2\alpha_2(n_2+Q_2)^2$, $\alpha_2(n_2+Q_2)[2(n_2+Q_2)^2 +$
 $+3(n_2+Q_2)+1] \leq 6\alpha_1(n_1+Q_1)^3$. Wird durch den Anstieg N zwischen
zwei Zonen die Gleichheit erreicht, dann $n_j+Q_j \rightarrow 0$ in j ,
während $j-1$ um die Ziffer 1 auf $n_{j-1}+Q_{j-1}+1$ angehoben
wird. Anregung erfolgt also "von Außen nach Innen". Stets
 $n_j+Q_j \geq 0$ ganzzahlig, da Anzahl von Strukturentitäten. Leerraum-
bedingung $n_j = -Q_j$ (n_j)_{max} = $L_j < \infty$ (keine divergierenden Selbst-
energiepotentiale). Intervalle $-Q_j \leq n_j \leq L_j < \infty$ bedingen
 $0 \leq N \leq L < \infty$ der Resonanzordnung. Mit $M_0(x) = M_0$ gilt
 $4\mu\alpha_1(L_1+Q_1)^3 = (2(P+1))^{2-k} M_0$ mit $G=k+1$ und daraus nach dem Bauprinzip
 $\alpha_2(L_2+Q_2)[2(L_2+Q_2)^2 + 3(L_2+Q_2)+1] = 6\alpha_1(L_1+Q_1)^3$, $\alpha_3(L_3+Q_3)(1+$
 $+L_3+Q_3) = 2\alpha_2(L_2+Q_2)^2$, $L_4+Q_4 = \alpha_3(L_3+Q_3)$. Implizit gilt für L
der Resonanzordnungen $\alpha_1(L_1+Q_1)^3 + \alpha_2(L_2+Q_2)^2 + \alpha_3(L_3+Q_3) +$
 $+ \exp(\frac{1-2k}{3Q_4}(L_4+Q_4)) = W_x(1+f(L))$. Auch bei der Bestimmung von L_j

und L nicht aufrunden, sondern Dezimalstellen abschneiden!
Die aus dem Bauprinzip gewonnenen L_j liefern die absoluten
Maximalmassen $M_{\max}$, aber die aus den L ermittelten Quadru-
peln die realen Grenzterme $M_L < M_{\max}$, die jedoch mit $(M_{\max} - M_L)c^2$
sekundär anregbar sind und dann die $M_{\max}$ erreichen.

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