```
 RR_UNC - Calculate uncertainties in reaction rates
 ----------------------------------------------------------
 Andrej Trkov, Jozef Stefan Institute, Ljubljana, Slovenia
                  Version Jul. 2019
 ----------------------------------------------------------

 Reference x.s. file      :
..\IRDFF-II.g725
 Source spectrum file     :
..\IRDFF-II_sp.g
 Reaction rate integ.flag :      1
 Reaction rate norm. flag :      1

 Spectrum MAT No.         :   9930
 Spectrum Integral            :  1.128E+00
 Spectrum average energy [eV] :  6.001E+04
 Spectrum peak energy    [eV] :  3.098E+04
 Reaction rate RR = spectrum integral

                                                                  Unc.    Unc.    Unc.
   No.  Mat.      MT    E(50%)        <RR> +/-  Unc              x.s.    Sp.     Total
                        [MeV]                 [mb]               [%]     [%]     [%]
 ----- ------ ------ ------- ------------------------          ------ ------ ------
     1   3000      1  0.05066 1.2461E+03 +/- 0.000E+00           0.00   0.00   0.00
     2   3000      2   0.0512 1.1694E+03 +/- 0.000E+00           0.00   0.00   0.00
     3   3000    205  0.04176 7.6606E+01 +/- 3.993E-01           0.52   0.00   0.52
     4   3000    207  0.04175 7.6698E+01 +/- 3.993E-01           0.52   0.00   0.52
     5   3006      1  0.05015 1.9505E+03 +/- 0.000E+00           0.00   0.00   0.00
     6   3006      2  0.06031 9.4113E+02 +/- 0.000E+00           0.00   0.00   0.00
     7   3006    105  0.04176 1.0093E+03 +/- 5.261E+00           0.52   0.00   0.52
     8   3006    205  0.04176 1.0093E+03 +/- 5.261E+00           0.52   0.00   0.52
     9   3006    207  0.04176 1.0093E+03 +/- 5.261E+00           0.52   0.00   0.52
    10   3007      1  0.05072 1.1882E+03 +/- 0.000E+00           0.00   0.00   0.00
    11   3007      2  0.05072 1.1882E+03 +/- 0.000E+00           0.00   0.00   0.00
    12   3007    207  0.03358 9.9582E-02 +/- 3.339E-03           3.35   0.00   3.35
    13   5000      1  0.04702 5.5463E+03 +/- 0.000E+00           0.00   0.00   0.00
    14   5000      2  0.04862 4.8532E+03 +/- 0.000E+00           0.00   0.00   0.00
    15   5000    101  0.03611 6.9161E+02 +/- 0.000E+00           0.00   0.00   0.00
    16   5000    205  0.10682 4.3743E-02 +/- 1.279E-02          29.25   0.00  29.25
    17   5000    207  0.03612 6.9157E+02 +/- 5.082E+00           0.73   0.00   0.73
    18   5010      1  0.04441 6.3441E+03 +/- 0.000E+00           0.00   0.00   0.00
    19   5010      2  0.05567 2.8605E+03 +/- 0.000E+00           0.00   0.00   0.00
    20   5010    101  0.03612 3.4751E+03 +/- 0.000E+00           0.00   0.00   0.00
    21   5010    107  0.03612 3.4748E+03 +/- 2.554E+01           0.73   0.00   0.73
    22   5010    205  0.10682 2.1982E-01 +/- 6.429E-02          29.25   0.00  29.25
    23   5010    207  0.03612 3.4752E+03 +/- 2.554E+01           0.73   0.00   0.73
    24   5010    800  0.03754 2.2757E+02 +/- 2.384E+00           1.05   0.00   1.05
    25   5010    801  0.03602 3.2472E+03 +/- 2.543E+01           0.78   0.00   0.78
    26   5011      1  0.04775 5.3482E+03 +/- 0.000E+00           0.00   0.00   0.00
    27   5011      2  0.04775 5.3481E+03 +/- 0.000E+00           0.00   0.00   0.00
    28  11023      1  0.04517 5.7172E+03 +/- 0.000E+00           0.00   0.00   0.00
    29  11023      2  0.04518 5.7151E+03 +/- 0.000E+00           0.00   0.00   0.00
    30  11023    102  0.03527 2.0747E+00 +/- 1.717E-01           8.28   0.00   8.28
    31  15031    103  0.78203 2.4210E-12 +/- 8.588E-13          35.47   0.00  35.47
    32  16000  15032g 1.02013 2.3049E-17 +/- 2.709E-18          11.75   0.00  11.75
    33  16032    103  1.02013 2.4264E-17 +/- 2.852E-18          11.75   0.00  11.75
    34  21045      1  0.03786 1.1818E+04 +/- 0.000E+00           0.00   0.00   0.00
    35  21045      2   0.0379 1.1742E+04 +/- 0.000E+00           0.00   0.00   0.00
    36  21045    102  0.03258 6.8906E+01 +/- 4.749E+00           6.89   0.00   6.89
    37  22000  21047g       0 3.6246E-14 +/- 2.512E-15           6.93   0.00   6.93
    38  22047    103   0.9488 4.8718E-13 +/- 3.376E-14           6.93   0.00   6.93
    39  25055      1  0.03483 1.2663E+04 +/- 0.000E+00           0.00   0.00   0.00
    40  25055      2  0.03481 1.2602E+04 +/- 0.000E+00           0.00   0.00   0.00
    41  25055    102  0.02578 3.3282E+01 +/- 1.986E+00           5.97   0.00   5.97
    42  26000  24051g       0 1.1117E-05 +/- 1.084E-06           9.75   0.00   9.75
    43  26000  25054g       0 1.3841E-11 +/- 7.325E-12          52.92   0.00  52.92
    44  26054      1   0.0147 1.0476E+04 +/- 0.000E+00           0.00   0.00   0.00
    45  26054      2  0.01468 1.0448E+04 +/- 0.000E+00           0.00   0.00   0.00
    46  26054    103  0.48899 2.3679E-10 +/- 1.253E-10          52.92   0.00  52.92
```

68	47	26054	107	0.03549	1.9020E-04	+/- 1.854E-05	9.75	0.00	9.75
69	48	26058	1	0.04776	1.2430E+04	+/- 0.000E+00	0.00	0.00	0.00
70	49	26058	2	0.04777	1.2414E+04	+/- 0.000E+00	0.00	0.00	0.00
71	50	26058	102	0.03739	1.5185E+01	+/- 2.455E+00	16.17	0.00	16.17
72	51	27059	1	0.0326	1.1469E+04	+/- 0.000E+00	0.00	0.00	0.00
73	52	27059	2	0.03262	1.1434E+04	+/- 0.000E+00	0.00	0.00	0.00
74	53	27059	102	0.02705	3.4833E+01	+/- 8.837E-01	2.54	0.00	2.54
75	54	27059	103	0.8467	8.3191E-16	+/- 7.428E-16	89.28	0.00	89.28
76	55	27059	107	0.38818	6.7469E-11	+/- 6.496E-11	96.28	0.00	96.28
77	56	27059	25056g	0.38818	6.7469E-11	+/- 6.496E-11	96.28	0.00	96.28
78	57	28000	27058g	0	5.7523E-09	+/- 3.888E-10	6.76	0.00	6.76
79	58	28058	103	0.46572	8.4498E-09	+/- 5.711E-10	6.76	0.00	6.76
80	59	29000	29064g	0.02584	4.9954E+01	+/- 4.790E+00	9.59	0.00	9.59
81	60	29063	1	0.04211	9.5472E+03	+/- 0.000E+00	0.00	0.00	0.00
82	61	29063	2	0.04225	9.4749E+03	+/- 0.000E+00	0.00	0.00	0.00
83	62	29063	102	0.02584	7.2241E+01	+/- 6.928E+00	9.59	0.00	9.59
84	63	30000	29064g	0.55195	6.9636E-10	+/- 1.251E-10	17.96	0.00	17.96
85	64	30000	29067g	0.02243	7.6020E-04	+/- 1.901E-04	25.00	0.00	25.00
86	65	30064	103	0.55195	1.4162E-09	+/- 2.544E-10	17.96	0.00	17.96
87	66	30067	103	0.02298	1.9241E-02	+/- 4.810E-03	25.00	0.00	25.00
88	67	30068	1	0.05141	7.5001E+03	+/- 0.000E+00	0.00	0.00	0.00
89	68	30068	2	0.05145	7.4793E+03	+/- 0.000E+00	0.00	0.00	0.00
90	69	41093	1	0.05344	9.7590E+03	+/- 0.000E+00	0.00	0.00	0.00
91	70	41093	2	0.0541	9.4927E+03	+/- 0.000E+00	0.00	0.00	0.00
92	71	41093	102	0.02946	2.6571E+02	+/- 2.060E+00	0.78	0.00	0.78
93	72	41093	41093m	0.10877	4.9029E-01	+/- 3.469E-02	7.08	0.00	7.08
94	73	41093	41094g	0.02946	6.6356E+01	+/- 5.143E-01	0.78	0.00	0.78
95	74	41093	41094m	0.02946	1.9935E+02	+/- 1.545E+00	0.78	0.00	0.78
96	75	42000	41092m	1.05574	5.5564E-17	+/- 1.396E-17	25.12	0.00	25.12
97	76	42092	41092m	1.05574	3.8241E-16	+/- 9.605E-17	25.12	0.00	25.12
98	77	45103	45103m	0.13219	4.9189E+00	+/- 1.470E+00	29.88	0.00	29.88
99	78	47109	1	0.04968	9.1872E+03	+/- 0.000E+00	0.00	0.00	0.00
100	79	47109	2	0.05134	8.2850E+03	+/- 0.000E+00	0.00	0.00	0.00
101	80	47109	47110n	0.04224	5.8008E+01	+/- 3.913E+00	6.75	0.00	6.75
102	81	48000	1	0.05036	8.5895E+03	+/- 0.000E+00	0.00	0.00	0.00
103	82	48000	2	0.05105	8.2448E+03	+/- 0.000E+00	0.00	0.00	0.00
104	83	48000	101	0.03484	3.4466E+02	+/- 0.000E+00	0.00	0.00	0.00
105	84	49000	49114m	0.03714	3.0532E+01	+/- 8.470E-01	2.77	0.00	2.77
106	85	49113	1	0.04793	7.6125E+03	+/- 0.000E+00	0.00	0.00	0.00
107	86	49113	2	0.04976	6.6831E+03	+/- 0.000E+00	0.00	0.00	0.00
108	87	49113	102	0.03592	9.5809E+02	+/- 0.000E+00	0.00	0.00	0.00
109	88	49113	49113m	0.44813	1.7210E-05	+/- 3.129E-06	18.18	0.00	18.18
110	89	49113	49114g	0.03249	2.4638E+02	+/- 6.799E+00	2.76	0.00	2.76
111	90	49113	49114m	0.03714	7.1171E+02	+/- 1.974E+01	2.77	0.00	2.77
112	91	49115	1	0.04847	7.4947E+03	+/- 0.000E+00	0.00	0.00	0.00
113	92	49115	2	0.05011	6.7192E+03	+/- 0.000E+00	0.00	0.00	0.00
114	93	49115	102	0.03505	7.7304E+02	+/- 0.000E+00	0.00	0.00	0.00
115	94	49115	49115m	0.39142	1.4671E-04	+/- 6.809E-06	4.64	0.00	4.64
116	95	49115	49116g	0.03504	1.6232E+02	+/- 6.548E+00	4.03	0.00	4.03
117	96	49115	49116m	0.03505	6.1072E+02	+/- 2.463E+01	4.03	0.00	4.03
118	97	57139	1	0.04683	7.2221E+03	+/- 0.000E+00	0.00	0.00	0.00
119	98	57139	2	0.04691	7.1755E+03	+/- 0.000E+00	0.00	0.00	0.00
120	99	57139	102	0.02953	4.1797E+01	+/- 4.481E+00	10.72	0.00	10.72
121	100	64000	1	0.04362	1.1558E+04	+/- 0.000E+00	0.00	0.00	0.00
122	101	64000	2	0.04399	1.0564E+04	+/- 0.000E+00	0.00	0.00	0.00
123	102	64000	101	0.0332	8.6729E+02	+/- 0.000E+00	0.00	0.00	0.00
124	103	73181	1	0.0443	1.2293E+04	+/- 0.000E+00	0.00	0.00	0.00
125	104	73181	2	0.04445	1.0581E+04	+/- 0.000E+00	0.00	0.00	0.00
126	105	73181	102	0.03171	7.5307E+02	+/- 2.903E+01	3.85	0.00	3.85
127	106	74186	1	0.04241	1.4204E+04	+/- 0.000E+00	0.00	0.00	0.00
128	107	74186	2	0.0424	1.3988E+04	+/- 0.000E+00	0.00	0.00	0.00
129	108	74186	102	0.03747	1.9252E+02	+/- 3.698E+00	1.92	0.00	1.92
130	109	79197	1	0.04402	1.3975E+04	+/- 0.000E+00	0.00	0.00	0.00
131	110	79197	2	0.04438	1.3309E+04	+/- 0.000E+00	0.00	0.00	0.00
132	111	79197	102	0.03266	6.1979E+02	+/- 3.784E+00	0.61	0.00	0.61
133	112	80199	80199m	0.58734	2.1888E-06	+/- 2.812E-07	12.85	0.00	12.85
134	113	90232	1	0.04708	1.5337E+04	+/- 0.000E+00	0.00	0.00	0.00
135	114	90232	2	0.04693	1.4668E+04	+/- 0.000E+00	0.00	0.00	0.00
136	115	90232	18	0.07056	1.6983E-03	+/- 1.393E-03	82.04	0.00	82.04

```
    116 90232     102  0.03481 4.8474E+02 +/- 6.435E+00      1.33   0.00   1.33
    117 92235       1  0.04683 1.5095E+04 +/- 0.000E+00      0.00   0.00   0.00
    118 92235      18  0.04232 2.2172E+03 +/- 2.685E+01      1.21   0.00   1.21
    119 92238       1  0.04666 1.4866E+04 +/- 0.000E+00      0.00   0.00   0.00
    120 92238       2  0.04663 1.4259E+04 +/- 0.000E+00      0.00   0.00   0.00
    121 92238      18  0.04903 9.0457E-02 +/- 5.840E-03      6.46   0.00   6.46
    122 92238     102  0.03384 3.9592E+02 +/- 5.761E+00      1.46   0.00   1.46
    123 93237       1  0.04597 1.5180E+04 +/- 0.000E+00      0.00   0.00   0.00
    124 93237       2  0.04645 1.2736E+04 +/- 0.000E+00      0.00   0.00   0.00
    125 93237      18   0.0563 2.0012E+01 +/- 4.259E+00     21.28   0.00  21.28
    126 94239       1   0.0466 1.5095E+04 +/- 0.000E+00      0.00   0.00   0.00
    127 94239       2  0.04641 1.2168E+04 +/- 0.000E+00      0.00   0.00   0.00
    128 94239      18  0.04773 1.8366E+03 +/- 2.310E+01      1.26   0.00   1.26
    129 95241       1  0.04758 1.5311E+04 +/- 0.000E+00      0.00   0.00   0.00
    130 95241       2   0.0487 1.2807E+04 +/- 0.000E+00      0.00   0.00   0.00
    131 95241      18  0.04799 1.8066E+01 +/- 6.805E-01      3.77   0.00   3.77
```