

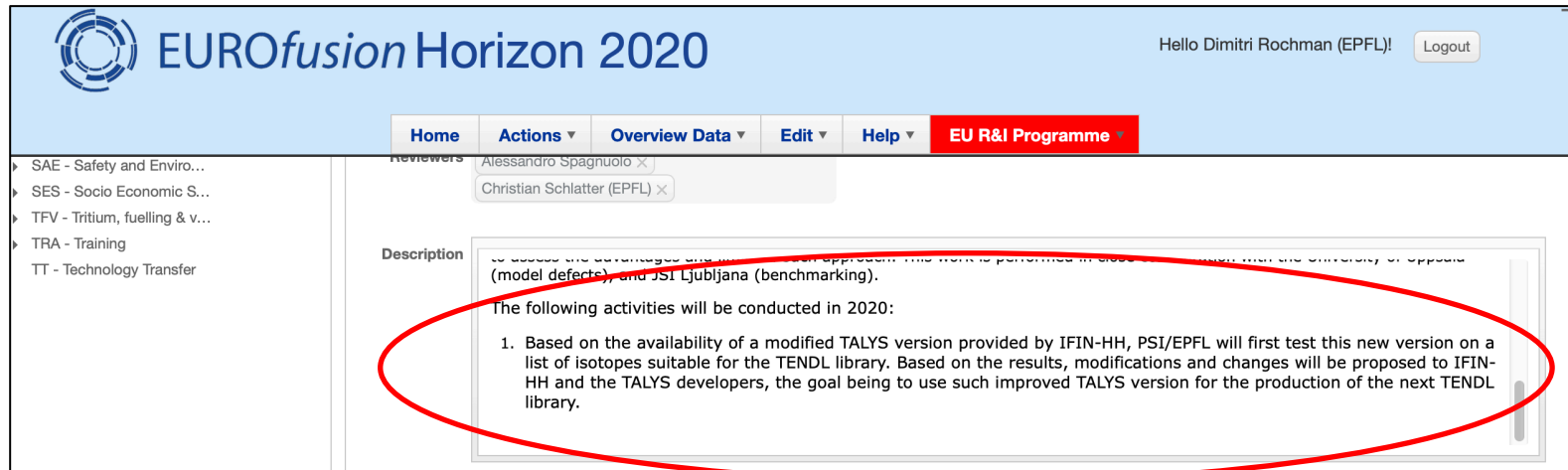


D. Rochman, M. Hursin

Task PMI-7.4-Too3 summary

EUROfusion Nuclear Data Tasks PMI-7.4 , via remote connection,
16 October 2020

- Task PMI-7.4-T003 Description:



EUROfusion Horizon 2020

Hello Dimitri Rochman (EPFL)! [Logout](#)

[Home](#) [Actions](#) [Overview Data](#) [Edit](#) [Help](#) **EU R&I Programme**

Reviewers
Alessandro Spagnuolo ×
Christian Schlatter (EPFL) ×

Description
The following activities will be conducted in 2020:

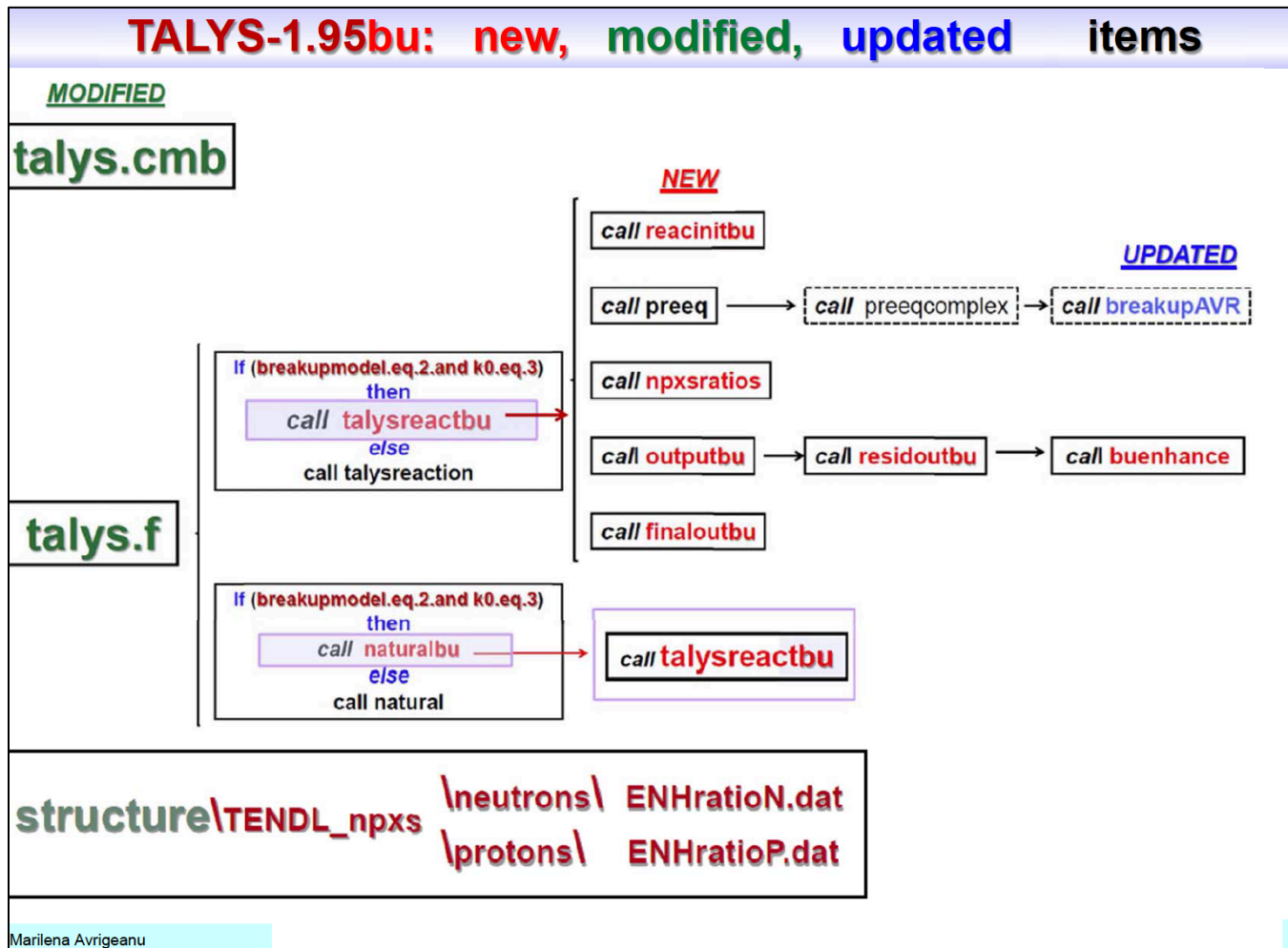
1. Based on the availability of a modified TALYS version provided by IFIN-HH, PSI/EPFL will first test this new version on a list of isotopes suitable for the TENDL library. Based on the results, modifications and changes will be proposed to IFIN-HH and the TALYS developers, the goal being to use such improved TALYS version for the production of the next TENDL library.

The following activities will be conducted in 2020:

1. Based on the availability of a modified TALYS version provided by IFIN-HH, PSI/EPFL will first test this new version on a list of isotopes suitable for the TENDL library. Based on the results, modifications and changes will be proposed to IFIN-HH and the TALYS developers, the goal being to use such improved TALYS version for the production of the next TENDL library.

Actions in 2020

- April 2020: M. Avrigeanu has sent the updated TALYS subroutines based on TALYS-1.95, including the option “breakupmodel 2”



- May-July 2020: D. Rochman performing test of the new TALYS for a number of isotopes. Example for Sn122:

```

1 #
2 # TALYS input file generated by Autotalys
3 #
4 projectile d
5 element Sn
6 mass 122
7 Ltarget 000
8 energy energies
9 maxlevelstar 30
10 partable y
11 bins 40
12 #
13 # Use best parameters from database
14 #
15 best y
16 #
17 # Produce files for processing into ENDF and increase required precision
18 #
19 endf y
20 endfdetail y
21 popeps 1.e-12
22 transeps 1.e-20
23 transpower 15
24 xseps 1.e-20
25 #
26 # Output of extra channels
27 #
28 channels y
29 filechannels y
30 spherical y
31 #
32 # Use better OMP for incident deuterons
33 #
34 deuteronomp 4
35 #
36 # Recoils
37 #
38 recoil y
39 recoilaverage y
40 #
41 # Specific addition for EAF files
42 #
43 isomer 0.1
44 maxchannel 8
45 #
46 # Specific keywords added through external TALYS files
47 #
48 deuteronomp 2
49 outpreequilibrium y
50 filetotal y
51

```

```

1 #
2 # TALYS input file generated by Autotalys
3 #
4 projectile d
5 element Sn
6 mass 122
7 Ltarget 000
8 energy energies
9 maxlevelstar 30
10 partable y
11 bins 40
12 #
13 # Use best parameters from database
14 #
15 best y
16 #
17 # Produce files for processing into ENDF and increase required precision
18 #
19 endf y
20 endfdetail y
21 popeps 1.e-12
22 transeps 1.e-20
23 transpower 15
24 xseps 1.e-20
25 #
26 # Output of extra channels
27 #
28 channels y
29 filechannels y
30 spherical y
31 #
32 # Use better OMP for incident deuterons
33 #
34 deuteronomp 4
35 #
36 # Recoils
37 #
38 recoil y
39 recoilaverage y
40 #
41 # Specific addition for EAF files
42 #
43 isomer 0.1
44 maxchannel 8
45 #
46 # Specific keywords added through external TALYS files
47 #
48 deuteronomp 2
49 outpreequilibrium y
50 filetotal y
51 breakupmodel 2

```

Actions in 2020

- Results presented in terms of residual isotopes. Example for Sn122:
- Difference between total production cross sections:

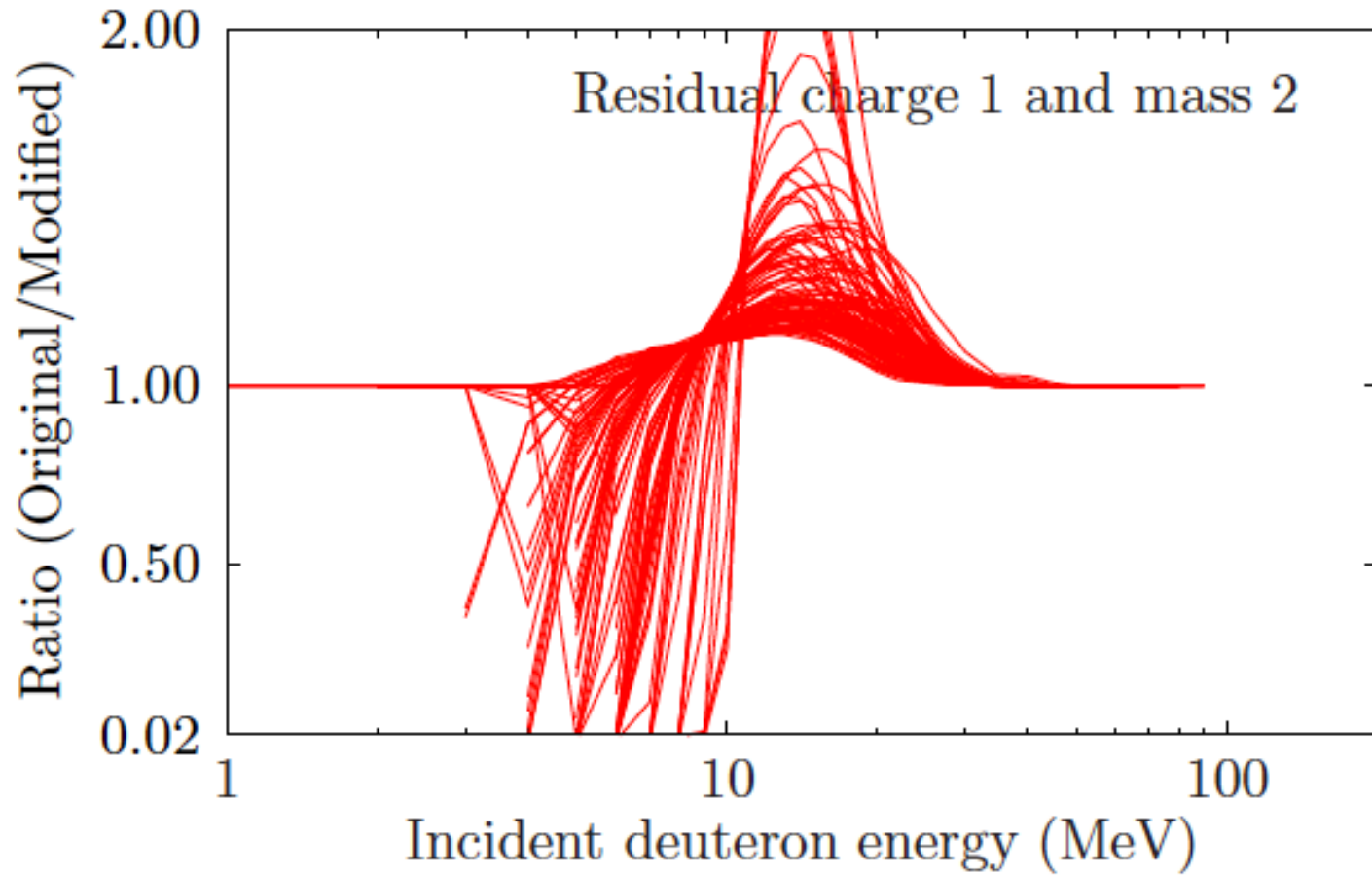
```
cat ../Sn122-original-d/Sn122/tables/residual/rp049121.tot ../Sn122-modified-d/Sn122/tables/residual/rp049121.tot
```

```
# d + 122Sn: Production of 121In - Total
# Q-value    =-5.90084E+00 mass= 120.907851
# E-threshold= 5.99831E+00
# # energies =    54
#      E          xs
1.00000E-03  0.00000E+00
2.00000E-03  0.00000E+00
5.00000E-03  0.00000E+00
1.00000E-02  0.00000E+00
2.00000E-02  0.00000E+00
5.00000E-02  0.00000E+00
1.00000E-01  0.00000E+00
2.00000E-01  0.00000E+00
5.00000E-01  0.00000E+00
1.00000E+00  0.00000E+00
2.00000E+00  0.00000E+00
3.00000E+00  0.00000E+00
4.00000E+00  0.00000E+00
5.00000E+00  0.00000E+00
6.00000E+00  0.00000E+00
7.00000E+00  0.00000E+00
8.00000E+00  0.00000E+00
9.00000E+00  0.00000E+00
1.00000E+01  0.00000E+00
1.10000E+01  0.00000E+00
1.20000E+01  1.70453E-12
1.30000E+01  1.47621E-10
1.40000E+01  5.95834E-09
1.50000E+01  1.38324E-07
1.60000E+01  2.10445E-06
1.70000E+01  2.19820E-05
```

```
# d + 122Sn: Production of 121In - Total
# Q-value    =-5.90084E+00 mass= 120.907851
# E-threshold= 5.99831E+00
# # energies =    54
#      E          xs_(d,x)      xs_BF      xs_SUM
1.00000E-03  0.00000E+00
2.00000E-03  0.00000E+00
5.00000E-03  0.00000E+00
1.00000E-02  0.00000E+00
2.00000E-02  0.00000E+00
5.00000E-02  0.00000E+00
1.00000E-01  0.00000E+00
2.00000E-01  0.00000E+00
5.00000E-01  0.00000E+00
1.00000E+00  0.00000E+00
2.00000E+00  0.00000E+00
3.00000E+00  0.00000E+00
4.00000E+00  0.00000E+00
5.00000E+00  0.00000E+00
6.00000E+00  0.00000E+00
7.00000E+00  0.00000E+00
8.00000E+00  0.00000E+00
9.00000E+00  0.00000E+00
1.00000E+01  0.00000E+00
1.10000E+01  0.00000E+00
1.20000E+01  1.69956E-12  0.00000E+00  1.69956E-12
1.30000E+01  1.47493E-10  0.00000E+00  1.47493E-10
1.40000E+01  5.95683E-09  5.39101E-16  5.95683E-09
1.50000E+01  1.38314E-07  6.21525E-13  1.38315E-07
1.60000E+01  2.10441E-06  1.46423E-10  2.10456E-06
1.70000E+01  2.19822E-05  4.07935E-09  2.19863E-05
```

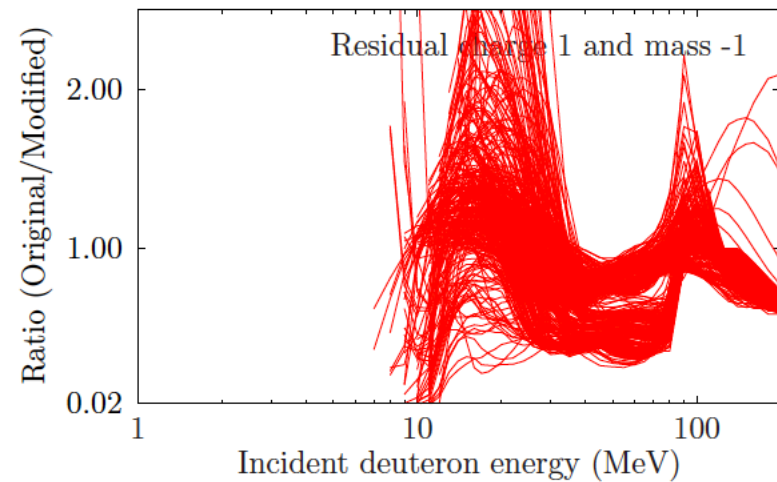
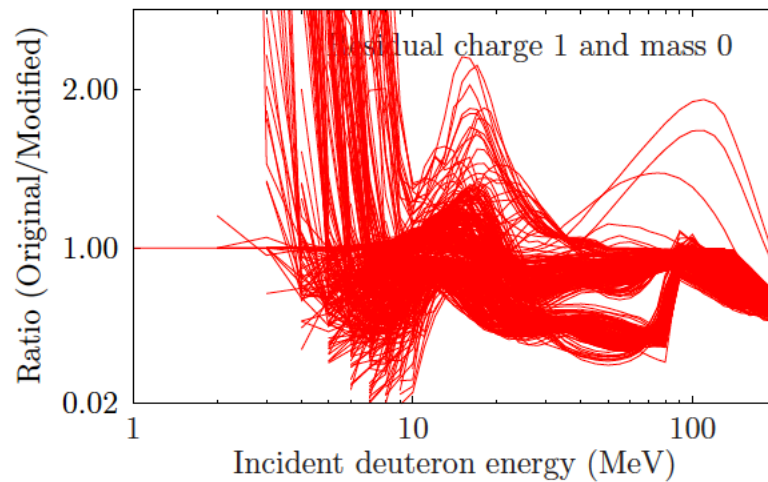
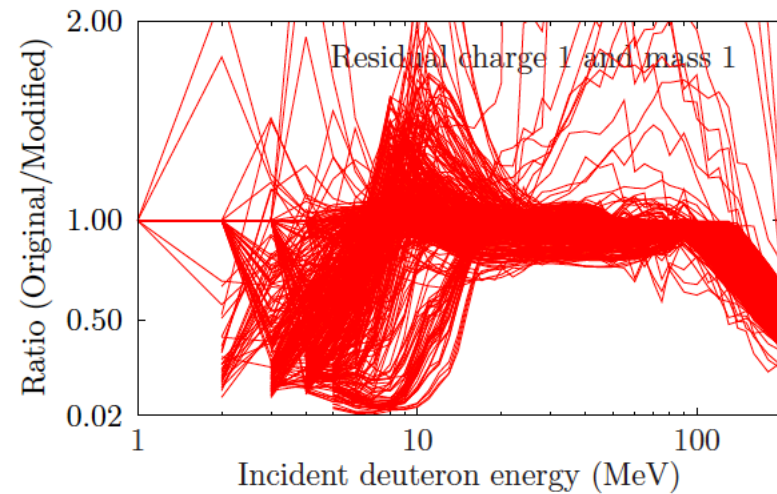
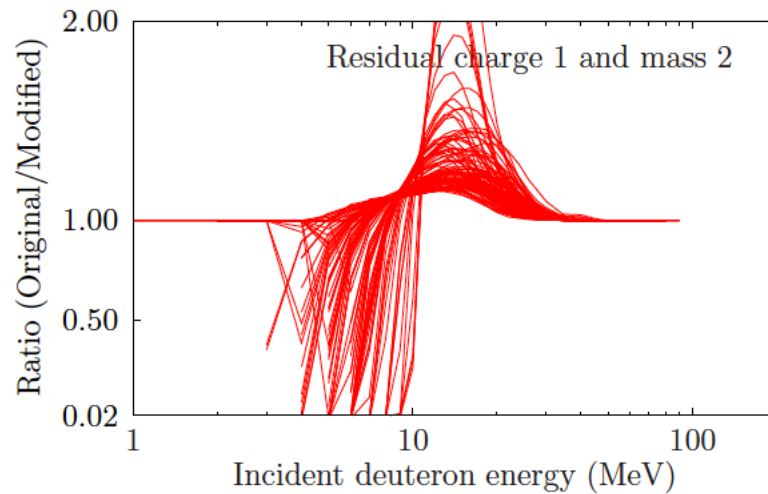

Actions in 2020

- Results presented in terms of residual isotopes.



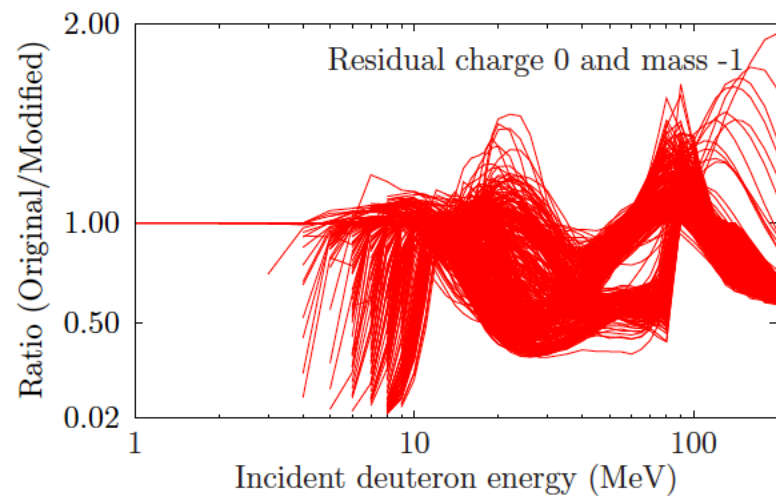
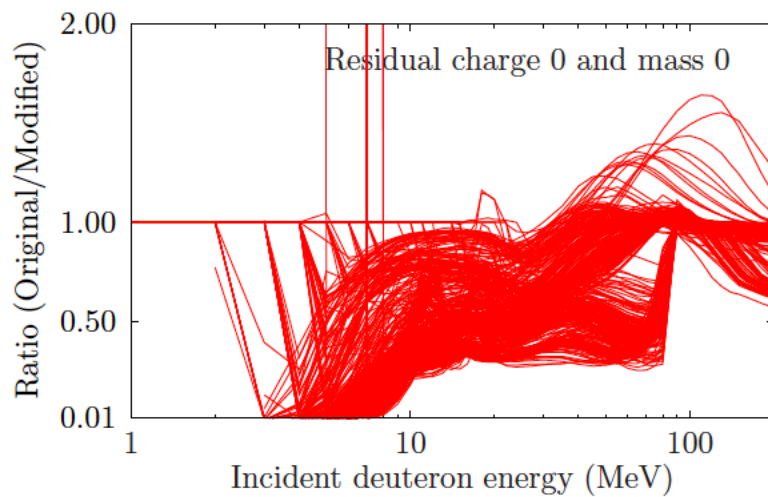
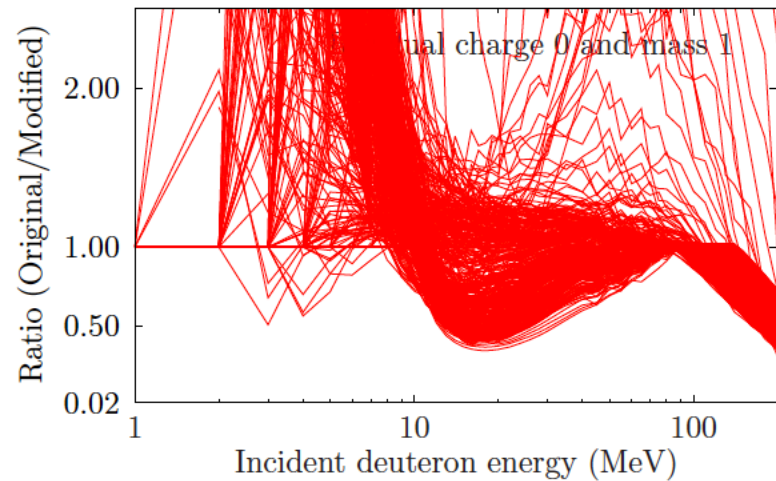
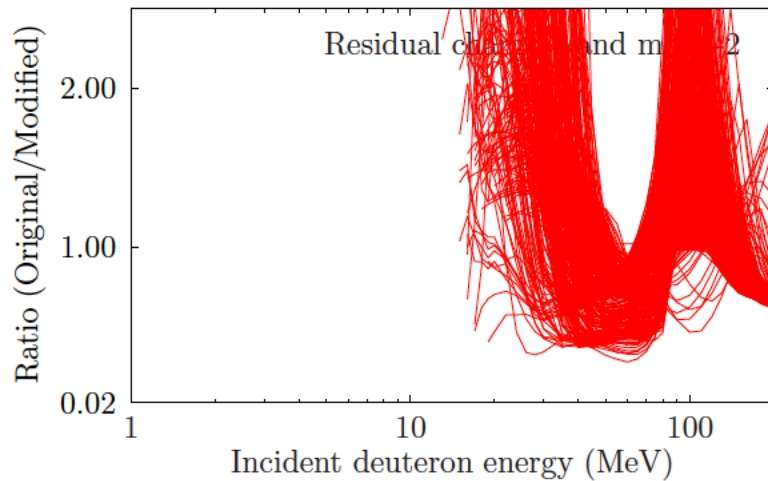
Actions in 2020

- Results presented in terms of residual isotopes.



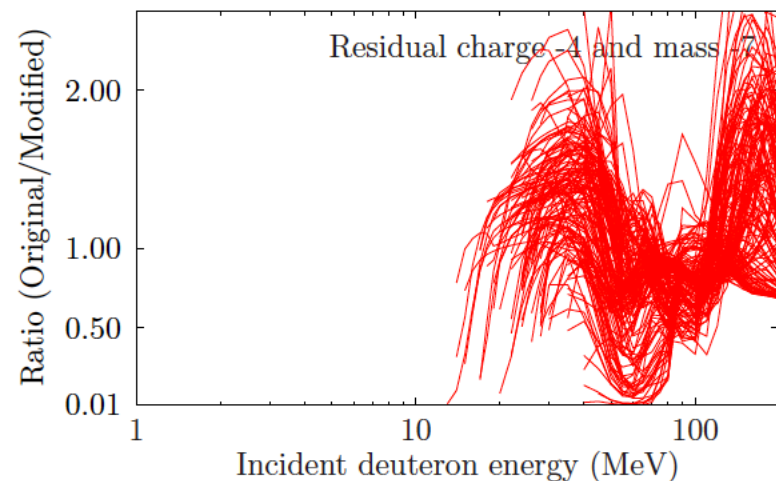
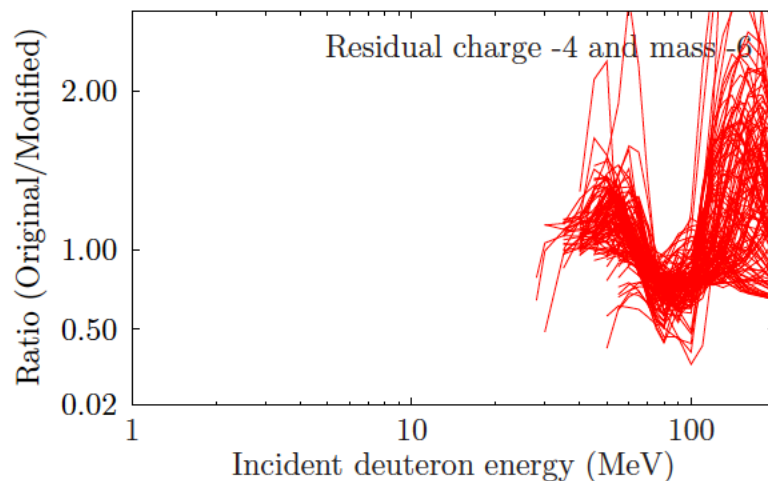
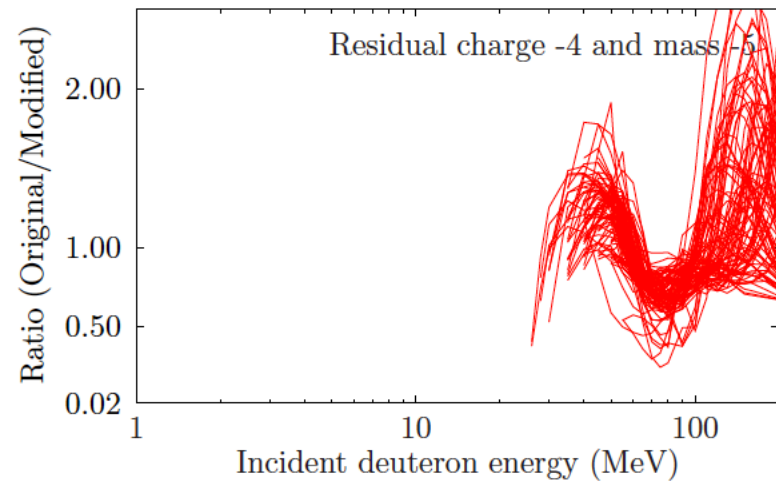
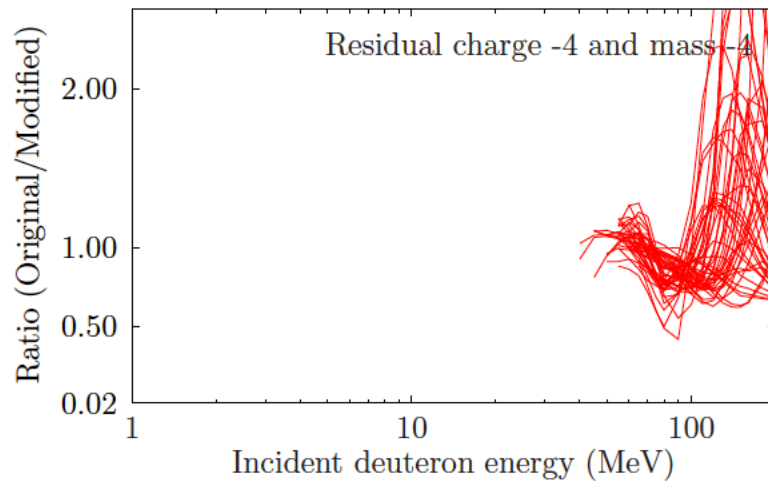
Actions in 2020

- Results presented in terms of residual isotopes.



Actions in 2020

- Results presented in terms of residual isotopes.



Conclusions

- New TALYS version delivered and tested.
- TALYS developers are informed.
- Report coming

