Photon Strength Function Update

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  → Provided on 14 Dec. 2022

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  → Provided on 13 Dec. 2022 & 9 June 2023
  → Discussion with Milan on the results:
    - spherical (BSk27+QRPA spin flip) nuclei satisfactory,
    - deformed nuclei may be improved wrt the SMLO scissors mode & upbend
    - Paper still to be written

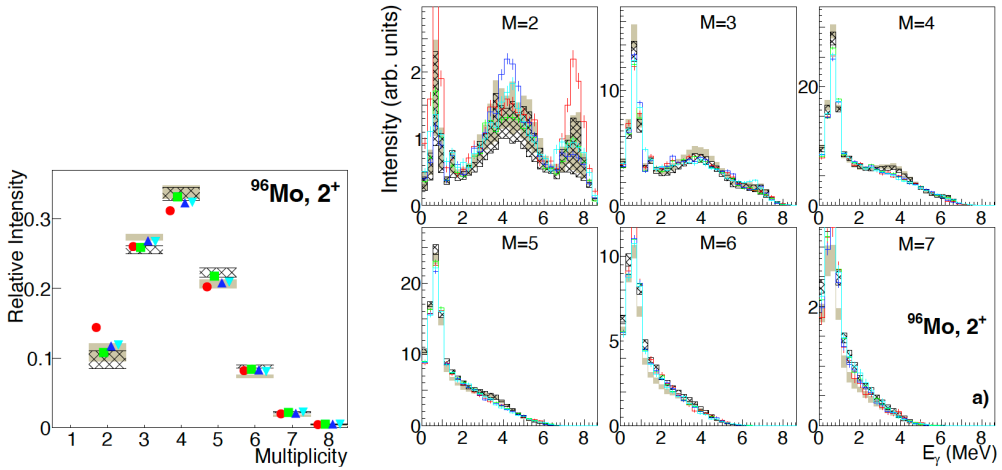

FIG. 1. (Color online) The MD (left) and MSC (right) spectra from decay of 2^+ resonances in ^{96}Mo. Simulations performed with HFB-based NLD. The gray area corresponds to $C = 20$, while black hatched one to $C = 40$.

See Conclusions with Milan

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  → Discussion on thermal n-capture data and PSF
    - Interesting low-energy PSF can be extracted

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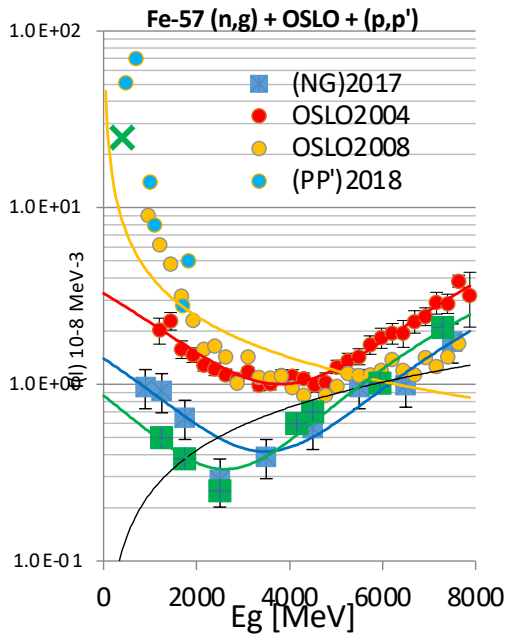

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  - (p,p') data (Bassauer et al.)
    - Problem with `f1_exp_050_120_PP_2016BA61.readme`: Copy of ^{208}Pb file ?
    - Use of capital letters in the file name and small letters in the file (fE1 vs fe1 in different libraries, arcdrc, pp, pg, thc, ...)
    - For ^{114,116,118,120}Sn, first PSF values are around 1e-23

      → not realistic – obtained by subtraction (fm1=f1-fe1) – should be removed if |f1-fe1|<0.01 ?

```
# fm1_exp_050_114_pp.dat
#
# Z = 50, A = 114
# No. of entries: 35
# Col 1: photon energy E in MeV
# Col 2: bin width dE in MeV
# Col 3: dipole strength fm1 in MeV^-3
# Col 4: uncertainty dfm1 in MeV^-3
# Format: 2f10.3, 2e12.3
# Author: S. Bassauer, P. von Neumann-Cosel
#   E          dE      f           df
     6.000     0.200   0.336E-22   0.241E-23
     6.200     0.200   0.385E-27   0.269E-28
     6.400     0.200   0.260E-22   0.178E-23
     6.600     0.200   0.273E-23   0.185E-24
     6.800     0.200   0.166E-08   0.172E-09
     7.000     0.200   0.803E-08   0.142E-08
     7.200     0.200   0.472E-08   0.746E-09
```

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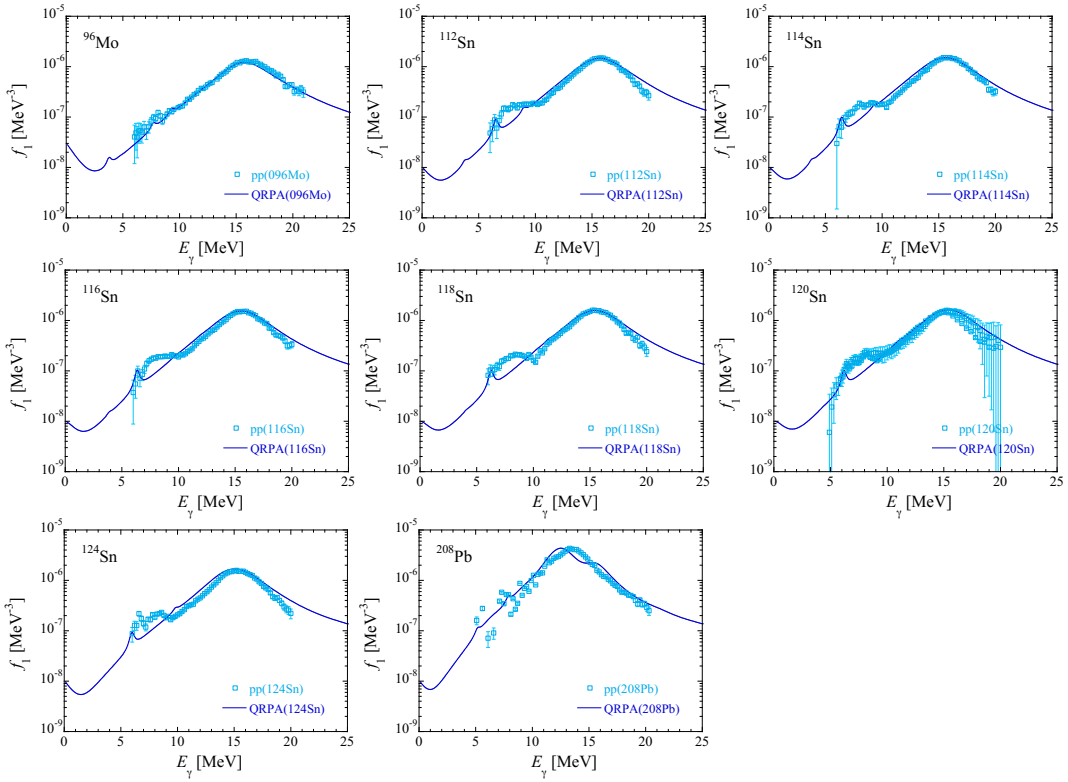
E1+M1 PSF



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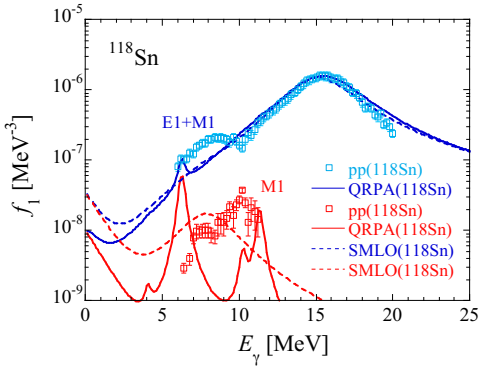
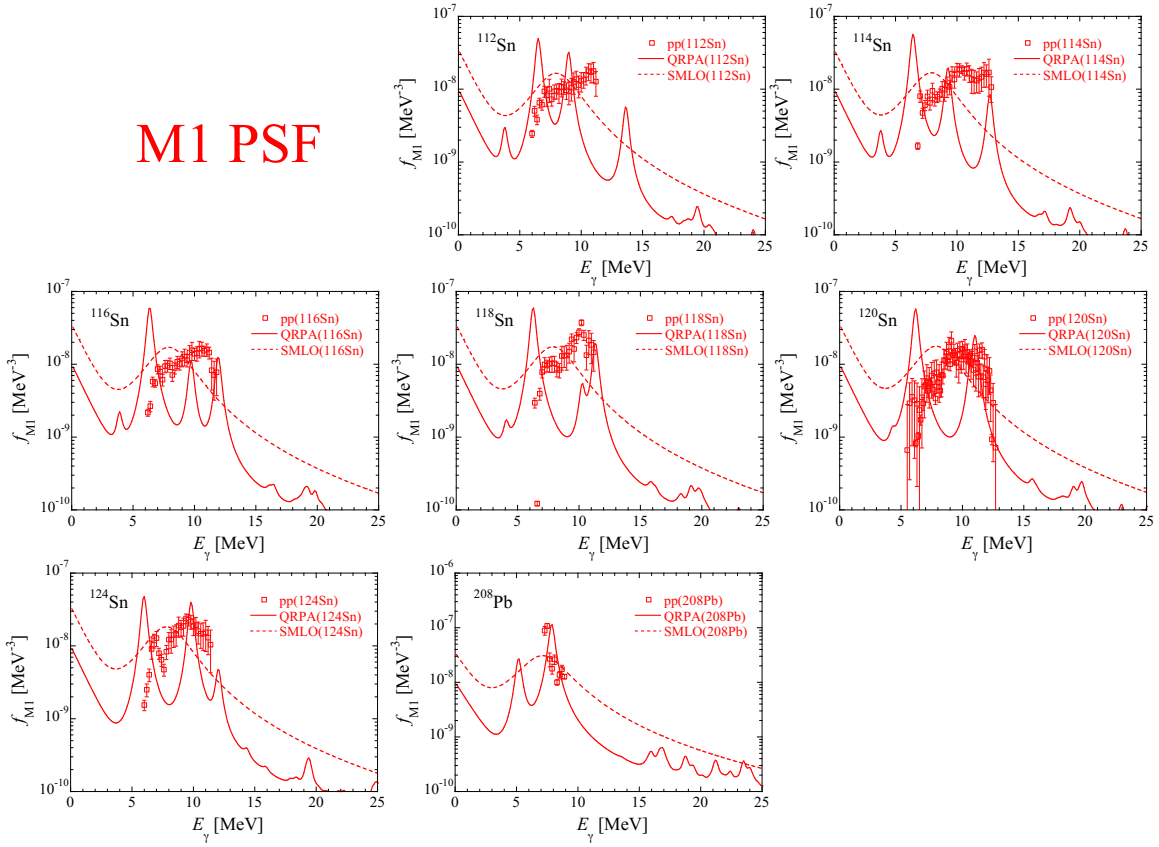


M1 PSF



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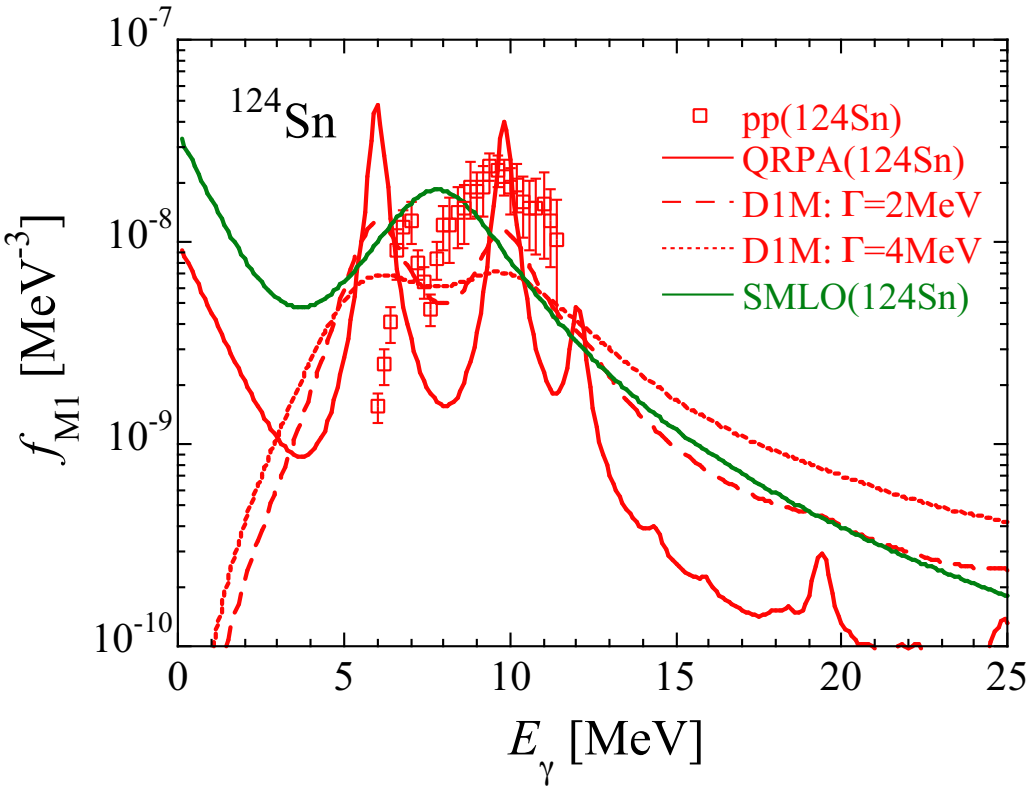
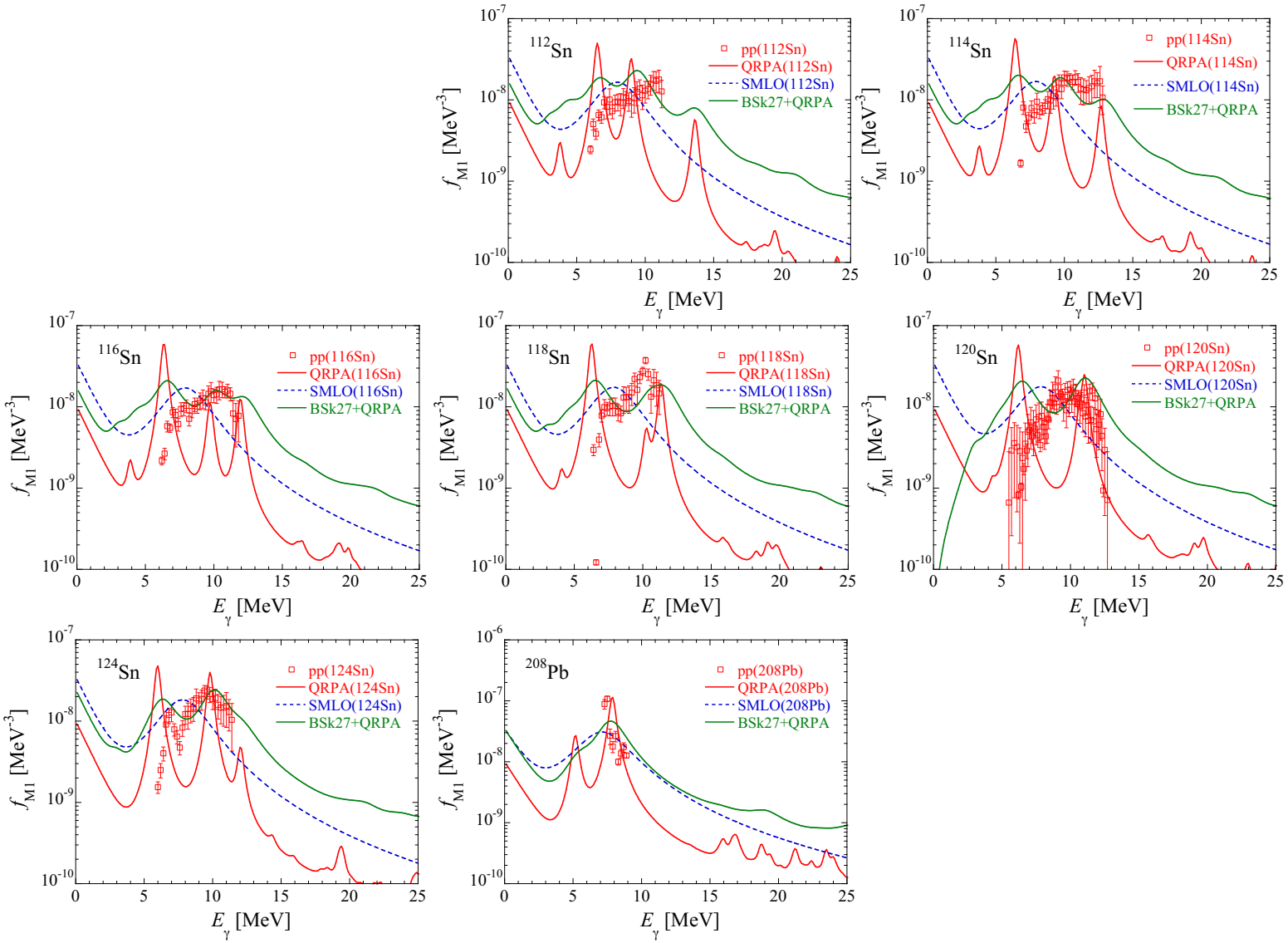


M1 PSF from (p,p'): D1M vs SMLO vs BSk27



Action points

- Test the new PSF 2023 library
  - (p,γ) data

  Format to be improved ?

For example:

```
# f1_exp_030_066_PG_1980ER05.dat
#
# Z = 30, A = 66
# No. of entries:  22
# Col 1: photon energy E in MeV
# Col 2: bin width dE in MeV
# Col 3: strength f1 in MeV^-3
# Col 4: uncertainty df1 in MeV^-3
# Format: 2f10.3, 2e12.3
# Author: B. Erlandsson Nuclear Physics A343, 197 (1980)
#    E         dE       f1           df1
    10.820          0.000    5.870E-08    7.500E-09
     9.780          0.000    4.120E-08    5.100E-09
```

Problematic cases:

```
f1_exp_023_051_PG_1979ER05.dat
f1_exp_027_059_PG_1982NI05.dat
f1_exp_029_061_PG_1982NI05.dat
f1_exp_029_062_PG_1982NI05.dat
f1_exp_031_065_PG_1987NI14.dat
f1_exp_031_069_PG_1983NI04.dat
f1_exp_033_071_PG_1979SZ06.dat
```

Author: Wiedeking ?

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  - (p,γ) data

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```
# f1_exp_040_090_PG_1983SZ02.dat
#
# Z = 40, A = 90
# No. of entries: 48
# Col 1: photon energy E in MeV
# Col 2: bin width dE in MeV
# Col 3: strength f1 in MeV^-3
# Col 4: uncertainty df1 in MeV^-3
# Format: 2f10.3, 2e12.3
# Author: P. Dimitriou/M. Wiedeking 1.761MeV subtracted, Szeflinska et al., Phys.Lett. 126B,
159 (1983)
#    E         dE       f1           df1
     9.229      0     5.790E-08     6.170E-09
     8.909      0     6.040E-08     8.610E-09
     9.019      0     6.100E-08    7.980E-09
     9.129      0     6.130E-08    1.030E-08
     9.579      0     6.990E-08    7.950E-09
     9.709      0     7.100E-08    7.240E-09
     9.339      0     7.670E-08    6.140E-09
     9.979      0     7.740E-08    9.650E-09
     9.469      0     7.910E-08    8.540E-09
     11.379     0     9.030E-08     6.690E-09
```

Action points

- Test the new PSF 2023 library
  - ➢ RM data

  Format to be improved ?

```
# f1_exp_042_095_RM.dat
#
# Z = 42, A = 95
# No. of entries: 64
# Col 1: photon energy E in MeV
# Col 2: bin width dE in MeV
# Col 3: dipole strength f1 in MeV^-3
# Col 4: uncertainty df1 in MeV^-3
# Format: 2f10.3, 2e12.3        → 2e13.3
# Author: M. Wiedeking (iThemba LABS)
#       E         dE       f1           df1
     0.950     0.500    0.401E-07    0.174E-07
```