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Self-consistent RPA approach

Single particle bases taken from Hartree-Fock (HF) calculations

Same interaction used in HF and RPA

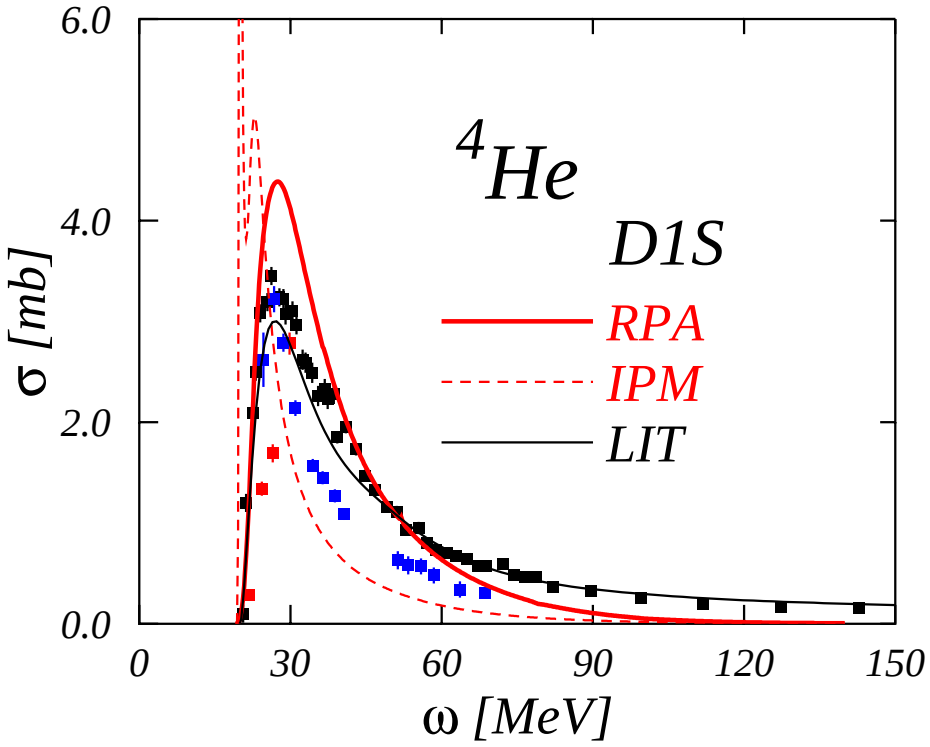
A unique interaction for all the nuclei

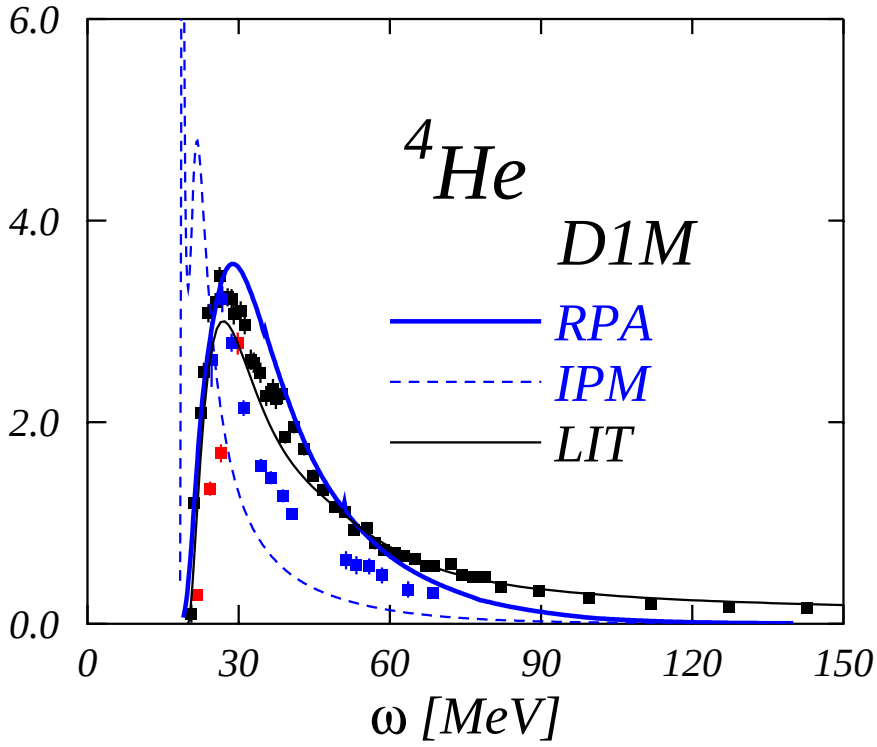
Parameter free calculations

^{4}He

E(D1S)= 30.28 MeV

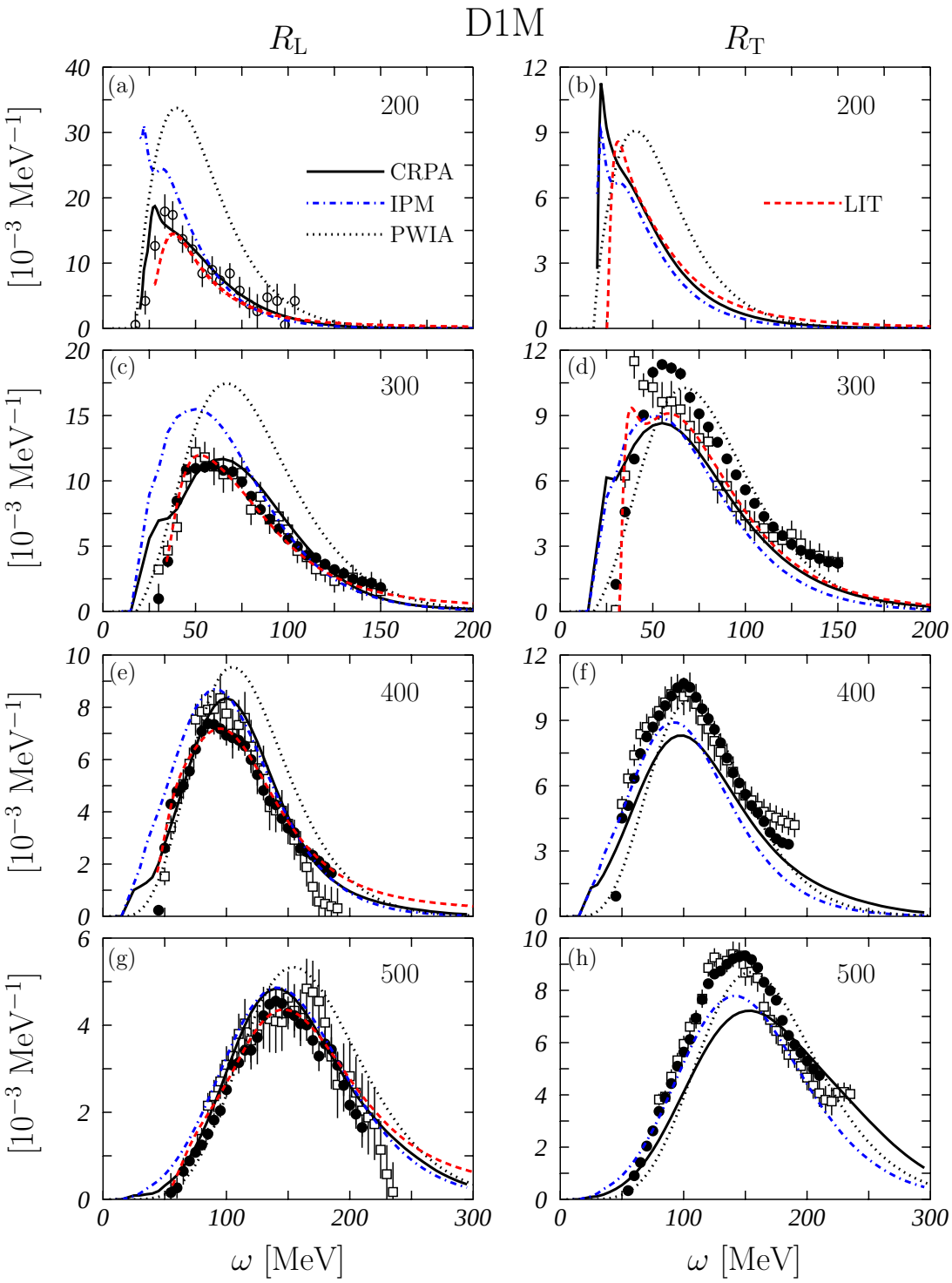
E(D1M)= 29.54 MeV

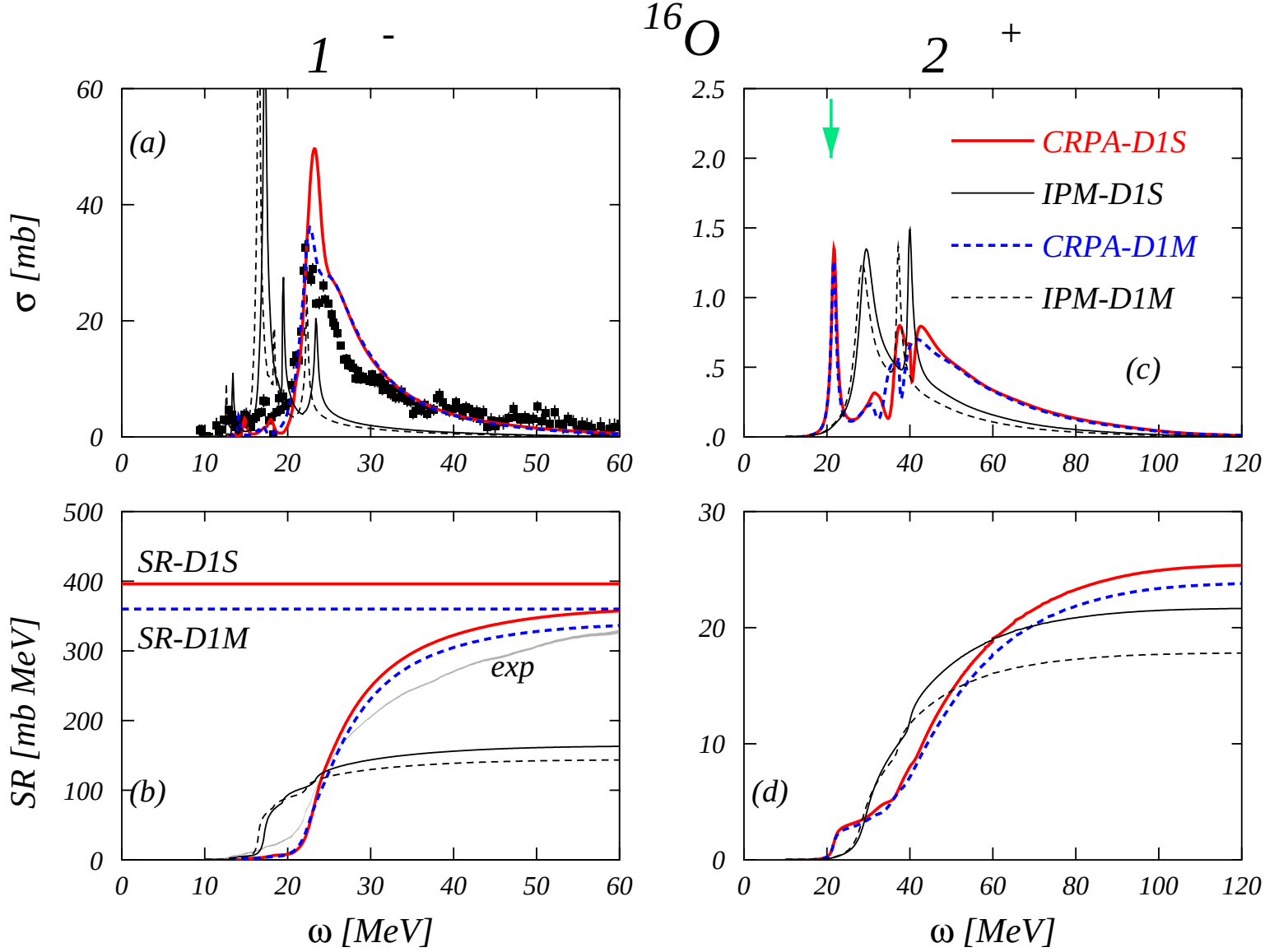




Data: T. Shima et al., Phys. Rev. C 72 (2005) 044004, B. Nilsson et al., Phys. Lett. B 626 (2005) 65, Yu. M. Arkatov et al. Yad. Konst. 4 (1979) 55.

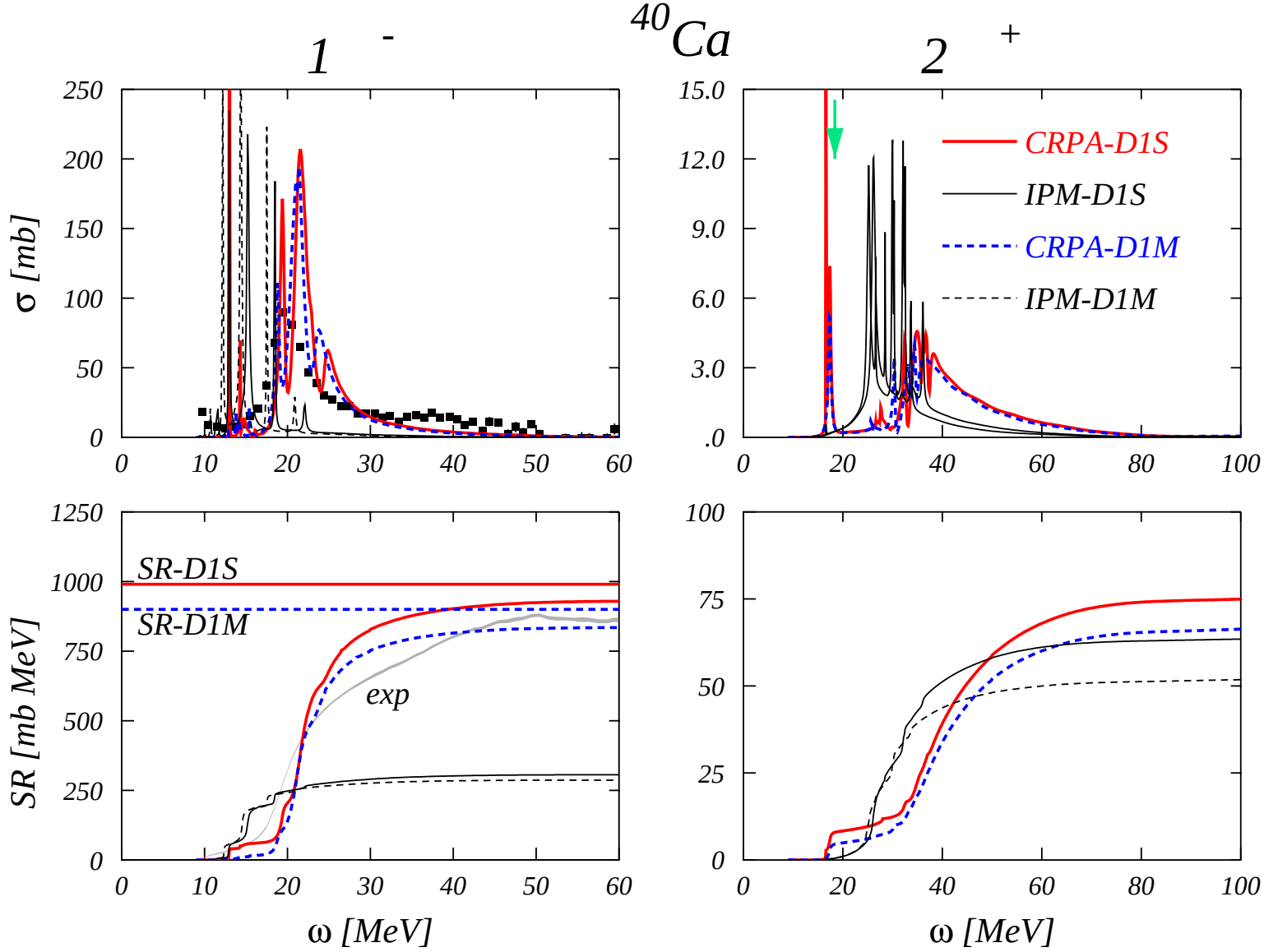
LIT: D. Gazit at al., Phys. Rev. Lett. 96 (2006) 112301, G. Orlandini, priv. comm.


D1M
$R_{\rm L}$
$R_{\rm T}$
(a)
(b)
(c)
(d)
(e)
(f)
(g)
(h)
200
300
400
500
CRPA
IPM
PWIA
LIT
$[10^{-3}\ {\rm MeV}^{-1}]$
ω [MeV]



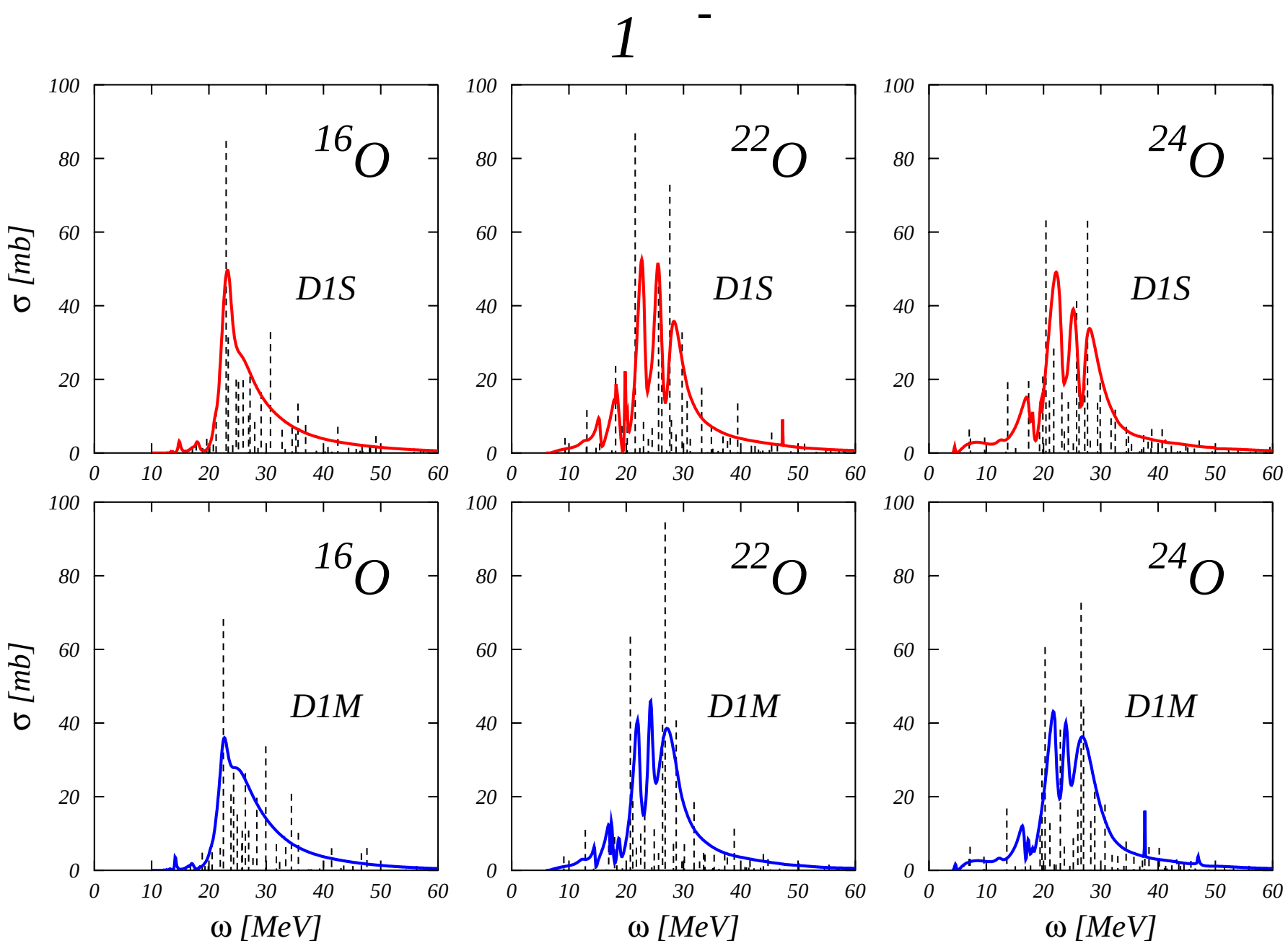
1^- data: J. Ahrens et al., Nucl. Phys. A 251 (1975) 479.

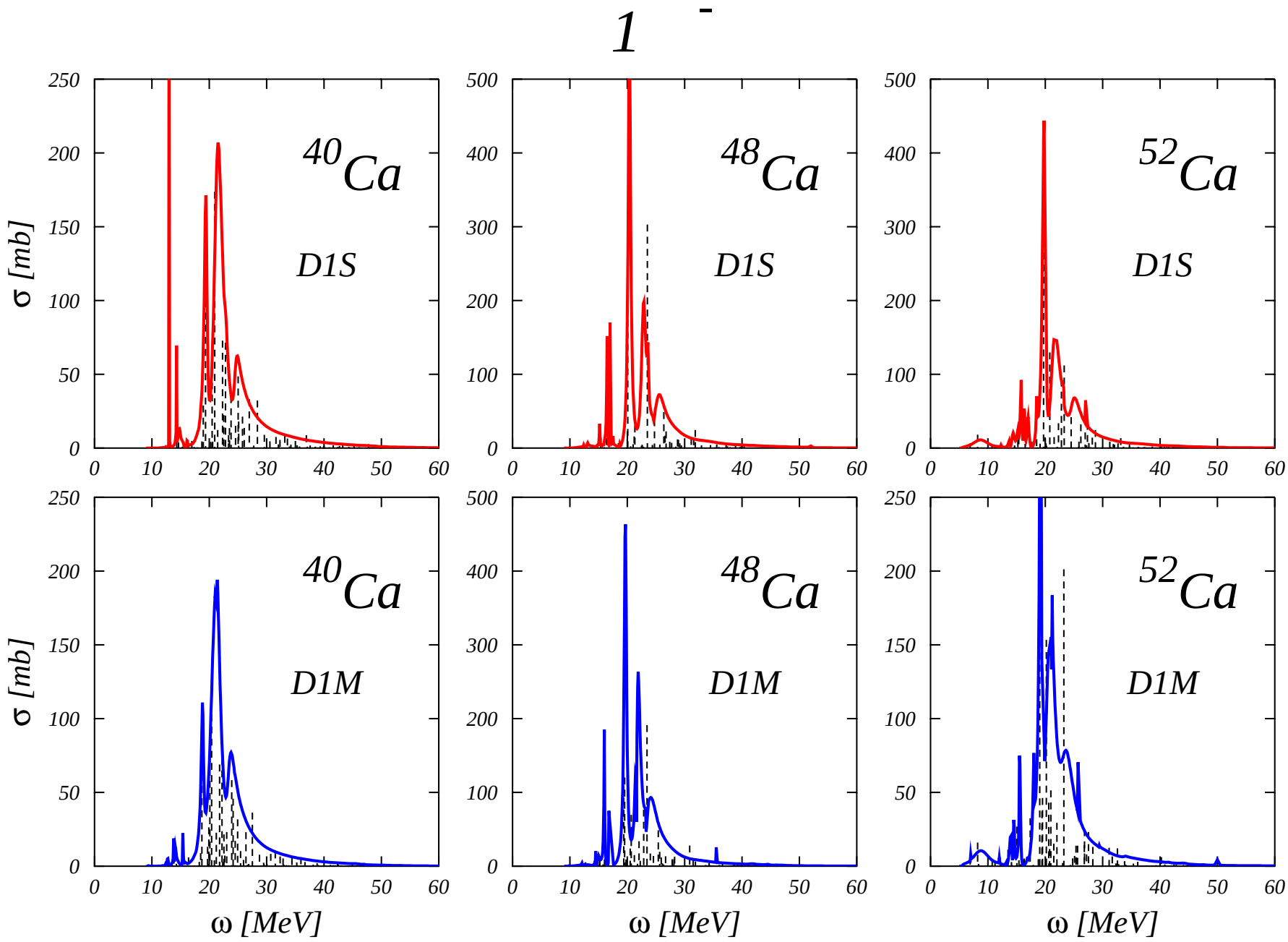
2^+ data: K. T. Knöpfke et al., Phys. Rev. Lett. 35 (1975) 779

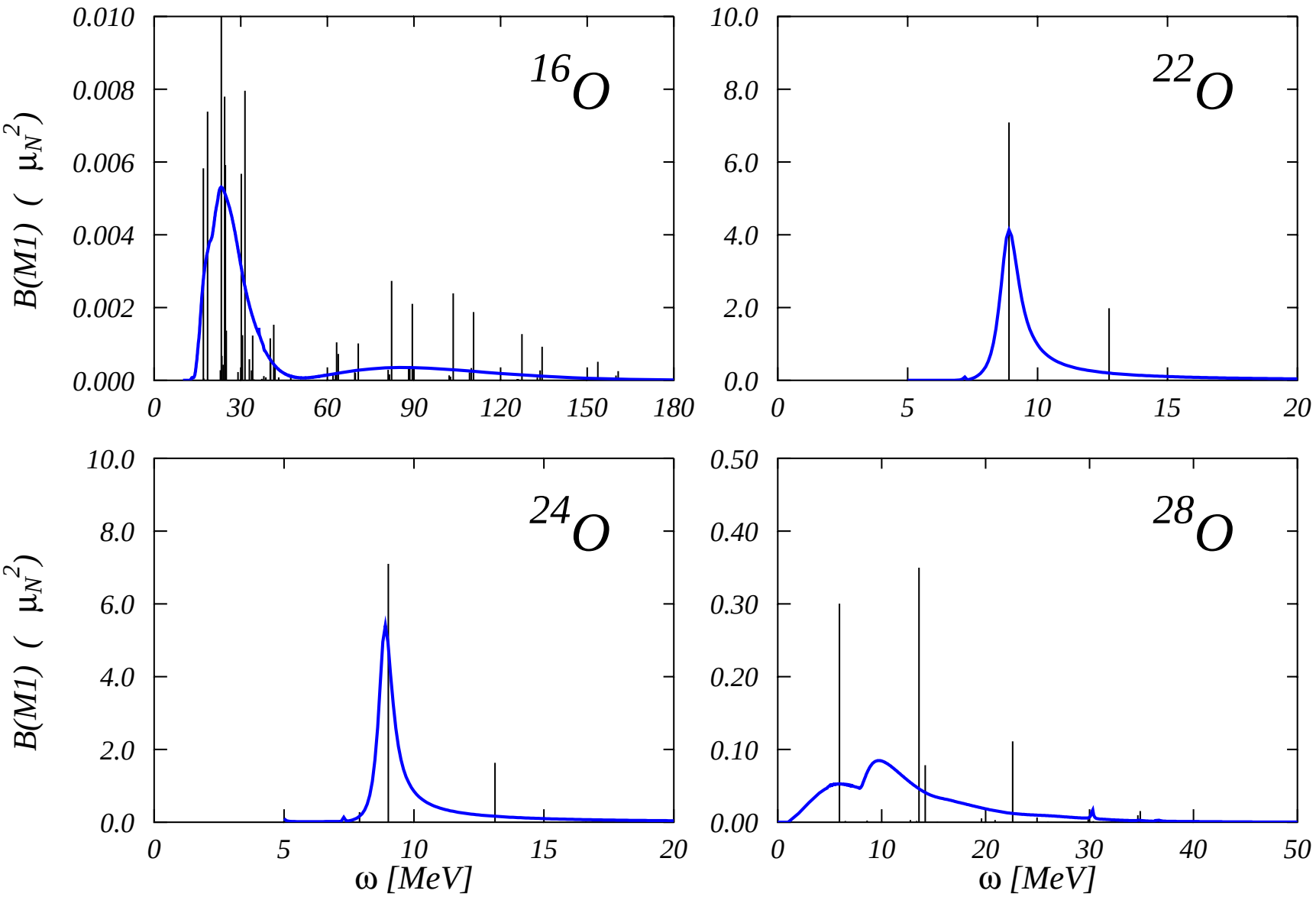


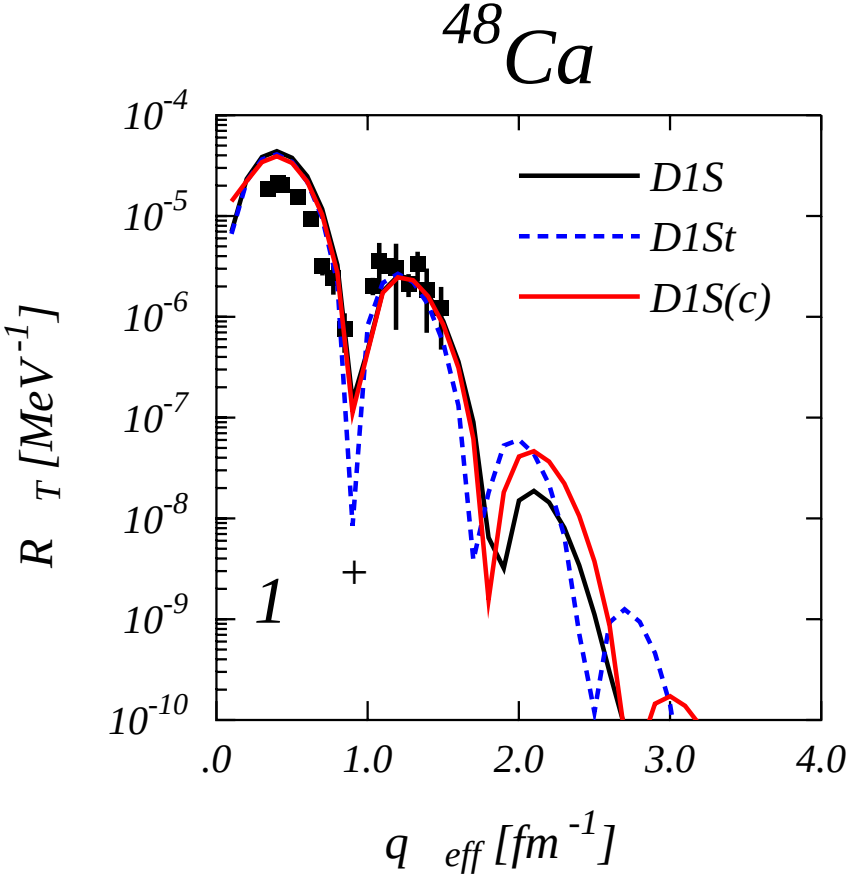
1^- data: J. Ahrens et al., Nucl. Phys. A 251 (1975) 479.

2^+ data: K. T. Knöpfke et al., Phys. Rev. Lett. 35 (1975) 779


1 -
16O
22O
24O
D1S
D1M
σ [mb]
ω [MeV]
0
20
40
60
80
100
0
10
20
30
40
50
60


1 -
40Ca
D1S
48Ca
D1S
52Ca
D1S
40Ca
D1M
48Ca
D1M
52Ca
D1M
σ [mb]
σ [mb]
ω [MeV]
ω [MeV]
ω [MeV]


D1S
16O
22O
24O
28O
B(M1) (μN2)
ω [MeV]
0.010
0.008
0.006
0.004
0.002
0.000
0
30
60
90
120
150
180
10.0
8.0
6.0
4.0
2.0
0.0
5
10
15
20
0.50
0.40
0.30
0.20
0.10
0.00
40
50



ω [MeV]

10.16 D1S

8.56 D1St

10.25 D1S(c)