Complete electric dipole response in ^{120}Sn: a test of the resonance character of the pygmy dipole resonance*

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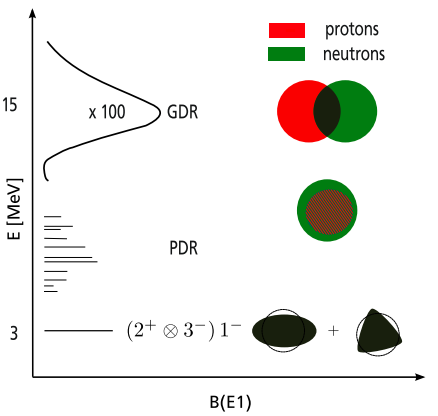
RCNP

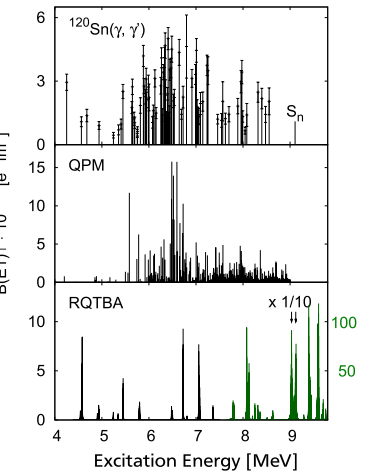
The pygmy dipole resonance in ^{120}Sn

Electric dipole modes



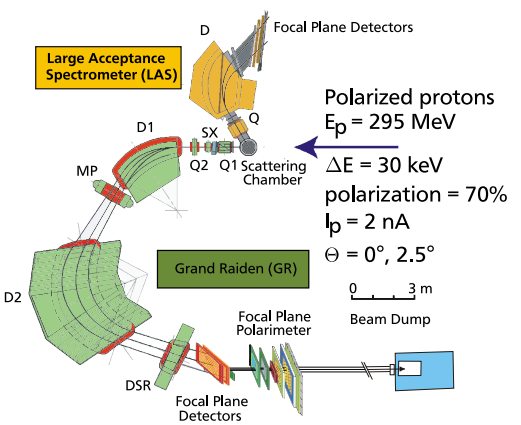
Comparison of experiment and theoretical predictions

- Nuclear resonance fluorescence measurements at the S-DALINAC (B.Özel)
- QPM: nonrelativistic quasi-particle phonon model calculations; mean field is taken from a global parametrization and levels near the Fermi surface are adjusted to experimental values.
  One-, two- and three-phonon states are included.
  (V.Yu.Ponomarev)
- RQTBA: relativistic quasiparticle time blocking approximation; extension of the self-consistent relativistic quasiparticle random-phase approximation; fully consistent calculation scheme based on covariant energy density functional theory.
  One- and two-phonon states are included.
  (E. Litvinova)

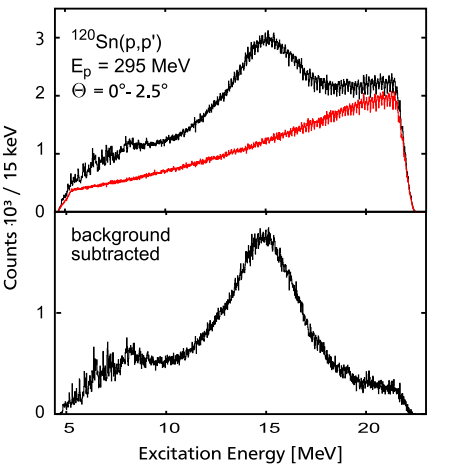


$(\vec{p},\vec{p}')$ measurements at RCNP

Experimental setup

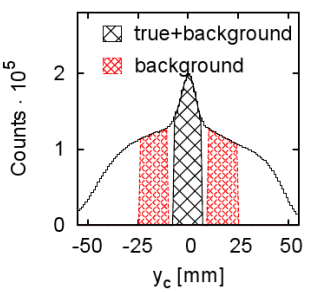


Spectrum at 0°

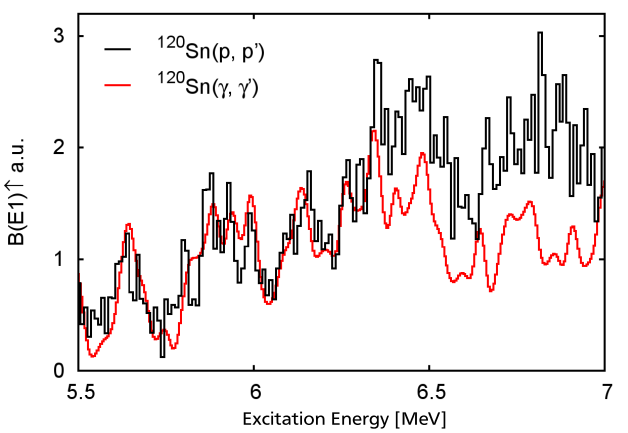


Background subtraction

- True events are concentrated around the central vertical beam position y_c
- Background events have approx. a flat distribution.



First results and further analysis procedure



Summary

- First high resolution polarized proton measurement on ^{120}Sn at 0° and 2.5°.
- Experimental observables:
  $\frac{d\sigma}{d\Omega}$, longitudinal polarization transfer coefficient D_{LL}

Outlook

- Data analysis including all corrections
- Complete extraction of B(E1) strength distribution by a multipole decomposition
- Measurement of polarisation observable D_{SS}

→ extract spinflip (M1) and non-spinflip (E1) character of transitions

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