

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



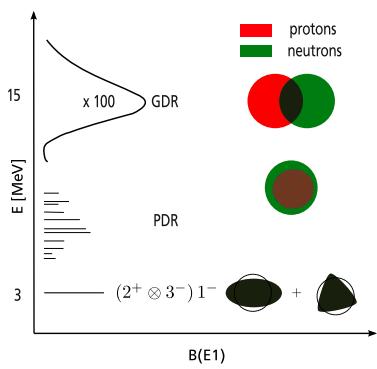
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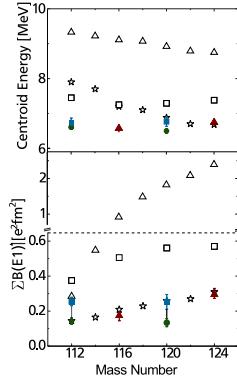
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The pygmy dipole resonance

Electric dipole modes



Systematics of the PDR in the tin isotope chain



Theory

- △ RQRPA (N. Paar et.al.)
- QPM (V.Yu. Ponomarev)
- ★ QPM (N.Tsoneva, H.Lenske)

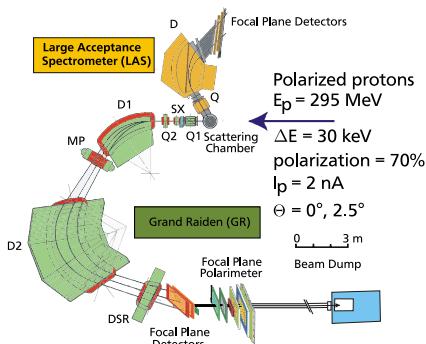
NRF measurements

- ▲ @ Gent
- @ Darmstadt (discrete transitions only)
- @ Darmstadt (incl. unresolved strengths)

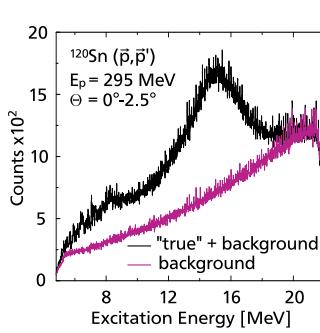
- ▶ Models qualitatively agree in systematic behaviour:
Summed $B(E1)$ strength rise with mass number,
whereas centroid energy decrease with mass number.
- ▶ But large discrepancies in the quantitative predictions.
- ▶ Experiments agree in the systematics of the summed $B(E1)$ strength, but show constant energy for the centroid.
- ▶ Measurement of the complete $B(E1)$ strength distribution is an important test of the models.

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

Experimental setup



Spectrum



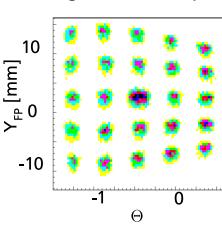
Current data analysis:

Reconstruction of scattering angles

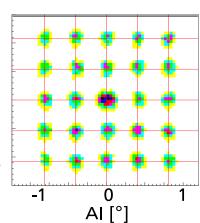
- ▶ Sieve-slit placed in front of GR
- ▶ $AI = f(\Theta, Y)$ dominated by Θ
- ▶ $BI = f(\Theta, Y)$ dominated by Y



Image at the focal plane

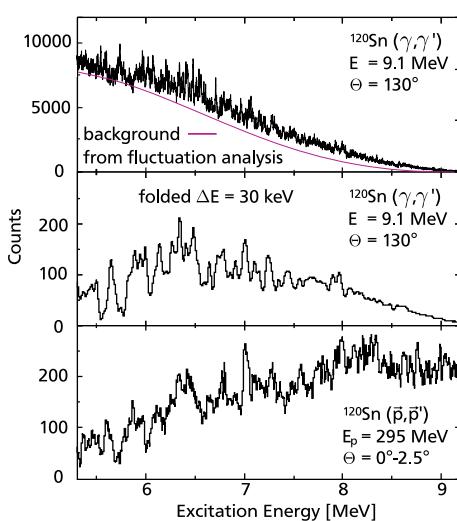


Reconstructed image



First results and further analysis procedure

Comparison with (γ, γ') measurements



Further steps

- ▶ Kinematical corrections
- ▶ Calibration of excitation energy
- ▶ Background subtraction
- ▶ Determination of the efficiency of wire chambers

→ Group report by Iryna Poltoratska:
HK 71.3

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

