

High-Resolution Study of Dipole Excitations in ^{208}Pb with Polarized Proton Scattering at 0° *

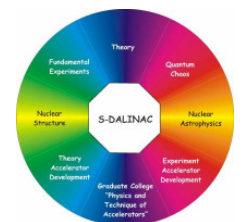


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Iryna Poltoratska

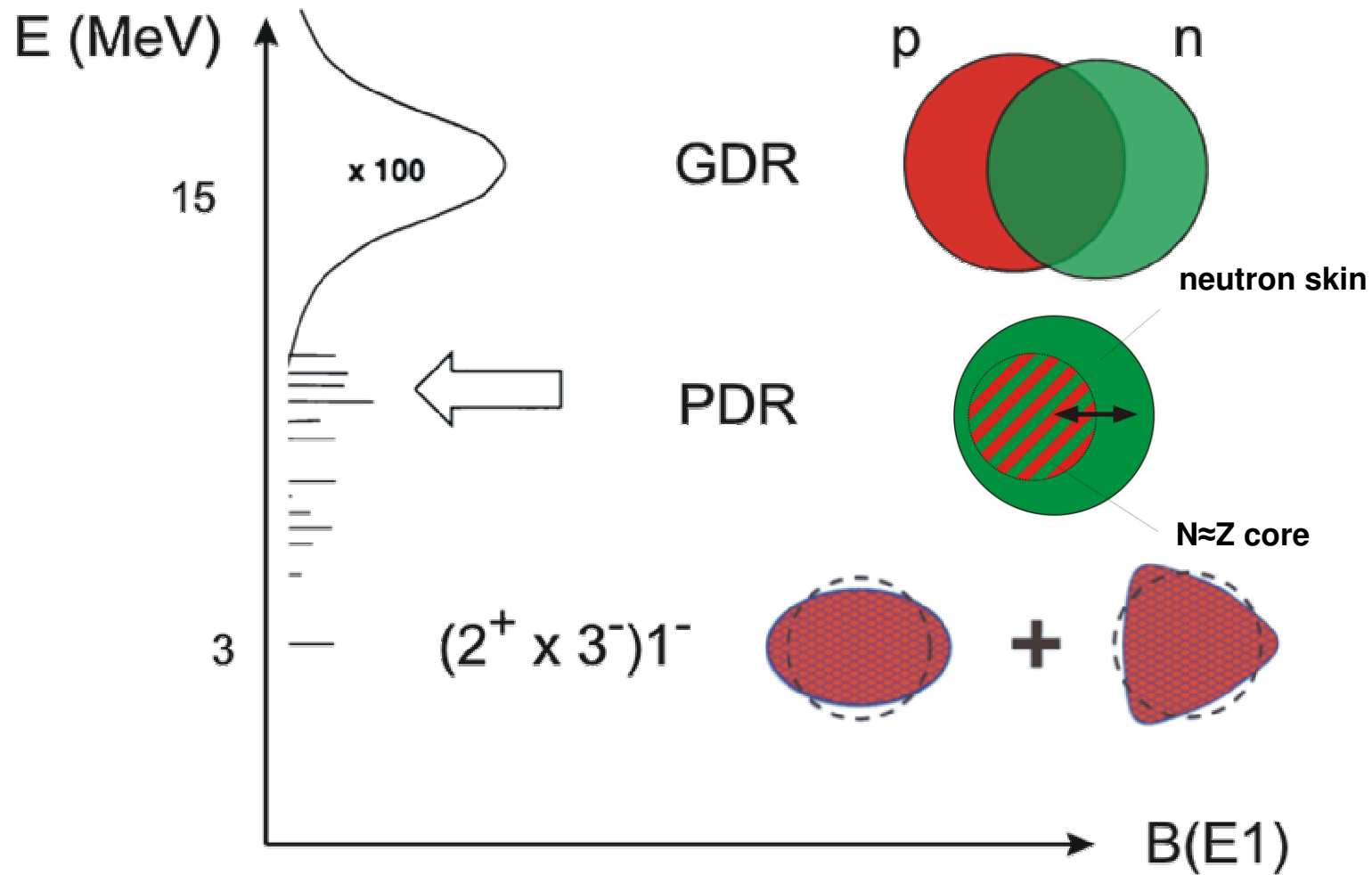
- Structure of low-lying E1 modes
- Preliminary results
- Outlook

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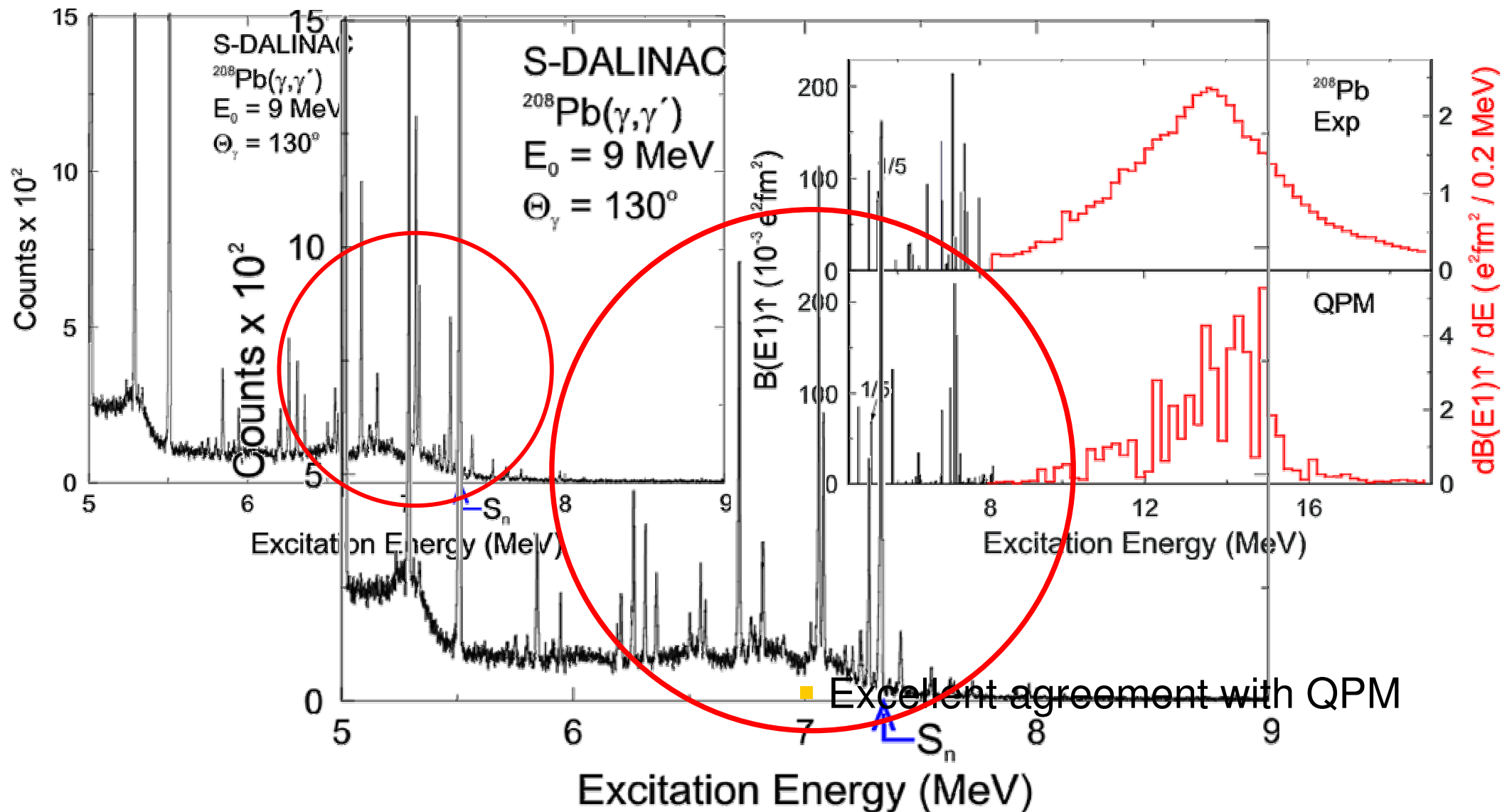
B(E1) Strength Distribution



Reminder: The Pygmy Dipole Resonance in ^{208}Pb



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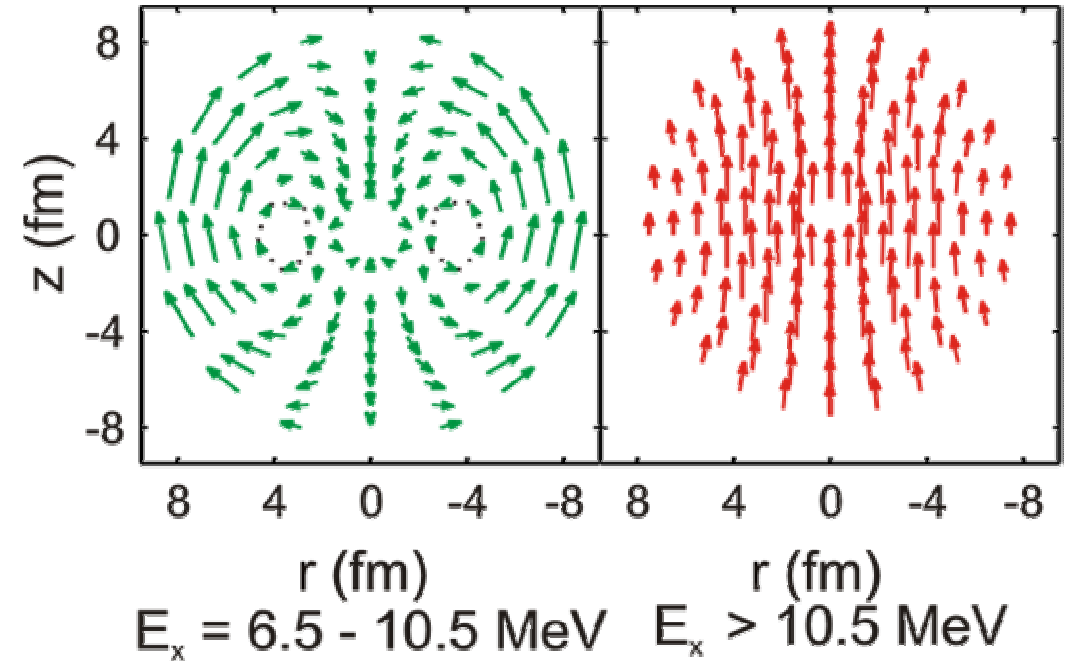
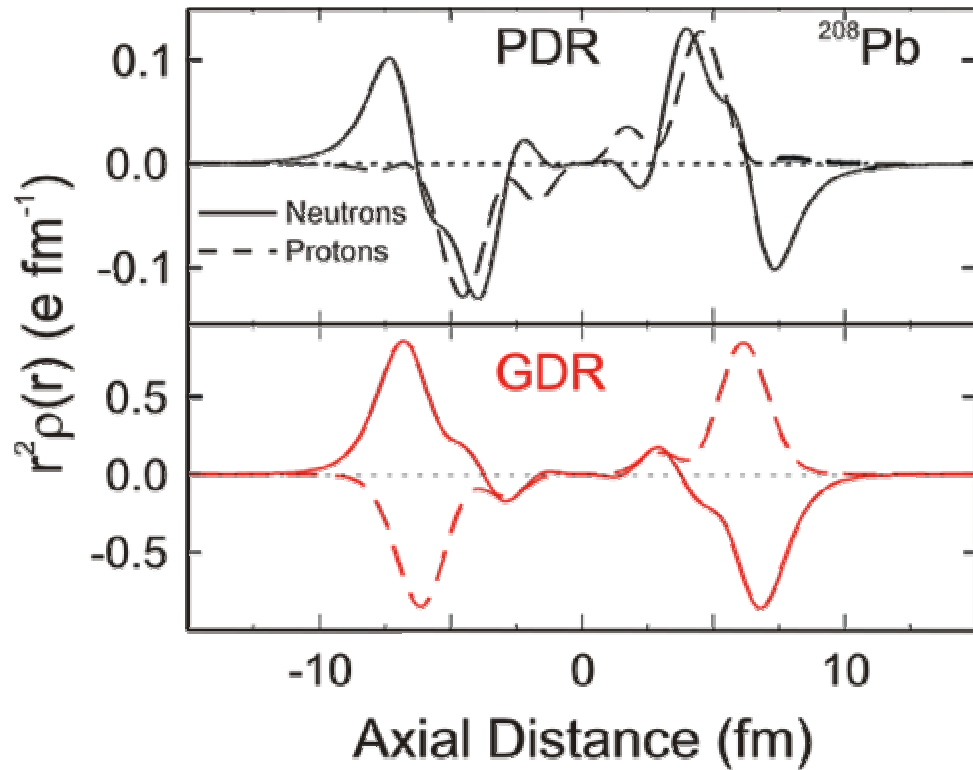


N. Ryezayeva et al., PRL 89 (2002) 272502

Structure of Low-energy E1 Modes



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- Oscillations of neutron skin

- Toroidal mode

Elucidation of the Structure of the Low-Energy Modes



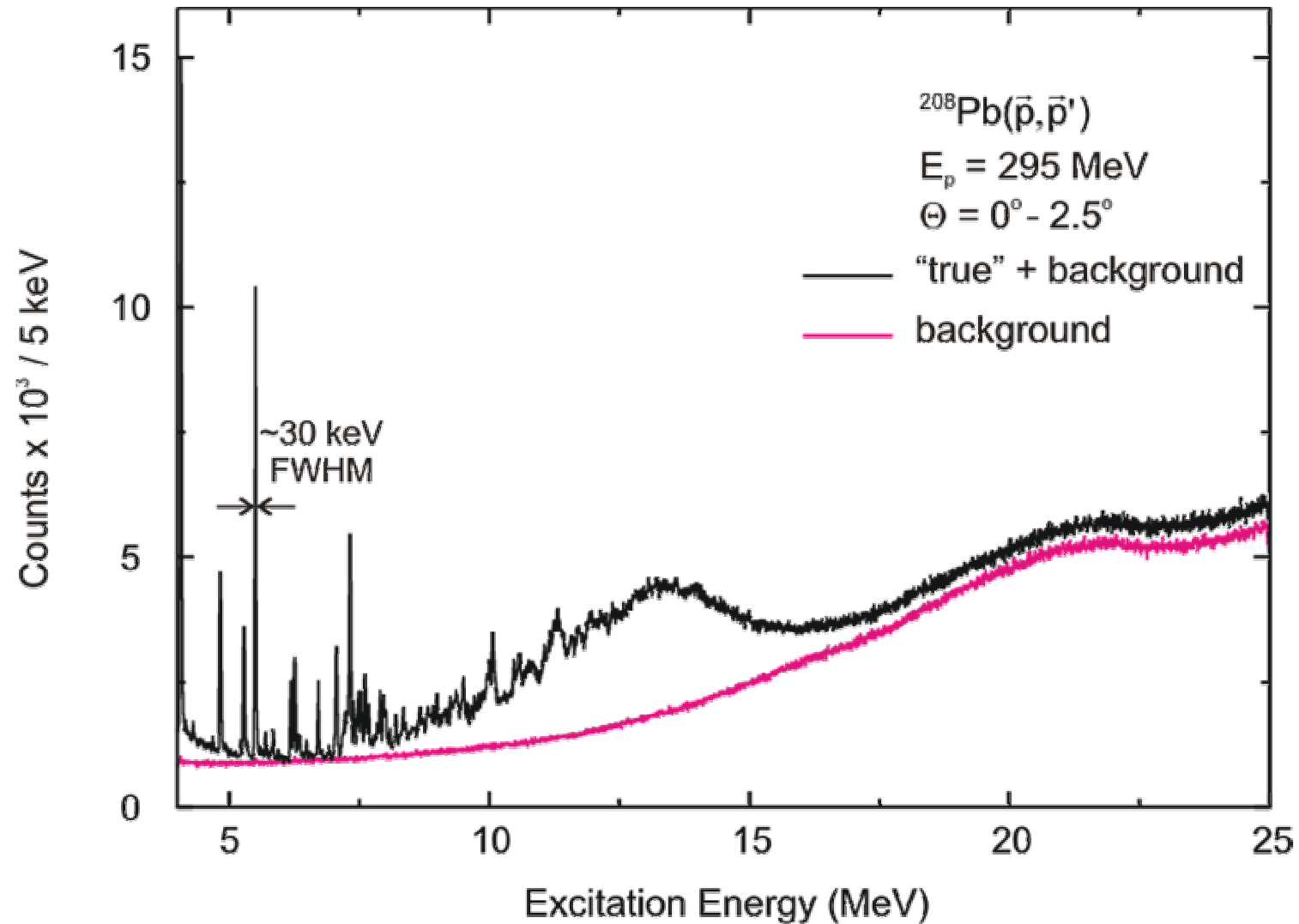
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- (e, e') at backward angles
 - transverse response
 - S-DALINAC**
- (\vec{p}, \vec{p}') at 0°
 - longitudinal response
(Coulomb excitation)
 - sensitive to polarization observables
 - RCNP**, Osaka University

Measured Spectrum



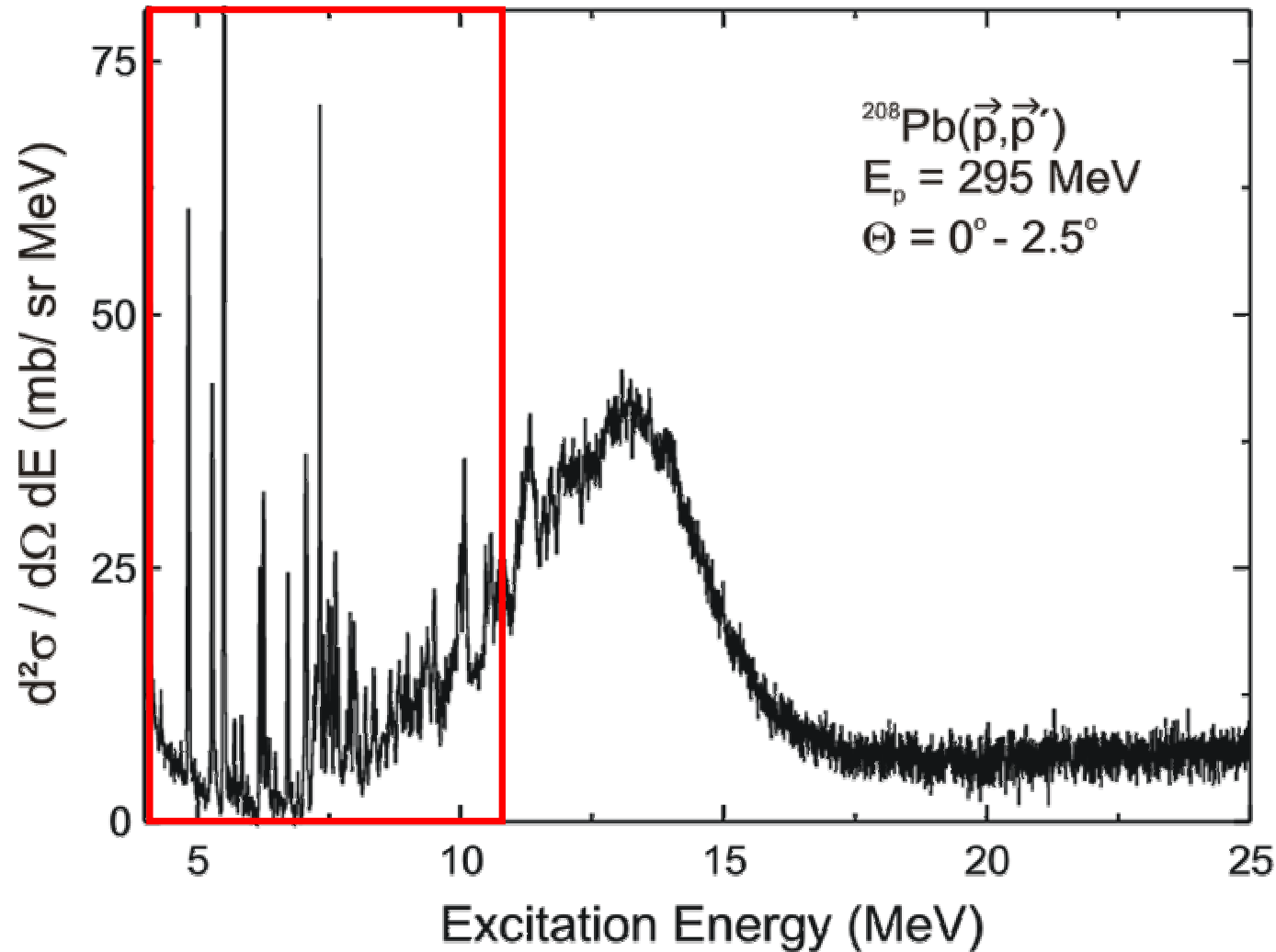
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Measured Spectrum: Background-Subtracted Spectrum



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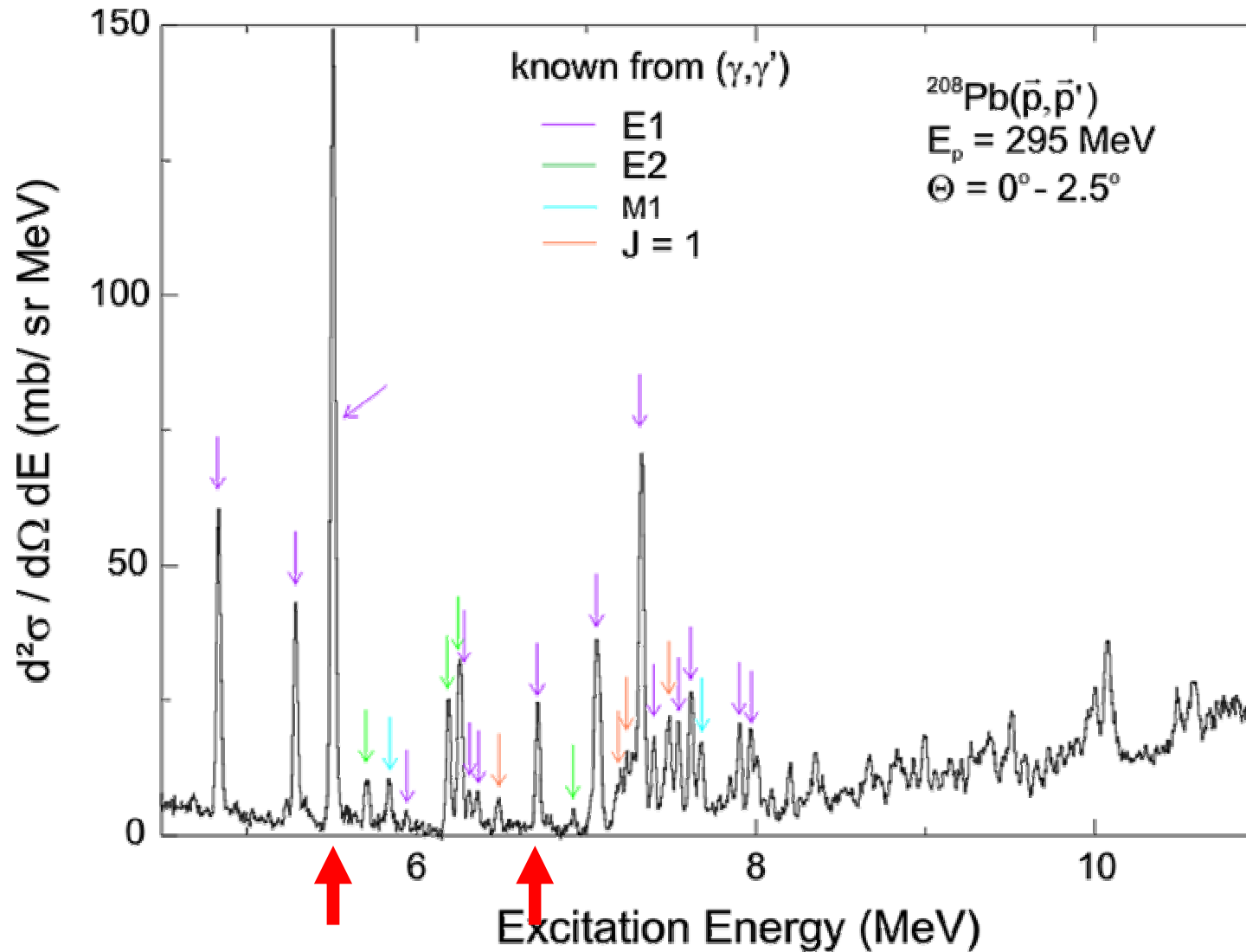


- Pronounced fine structure of the GDR is recognized
- Strong Coulomb excitation of the GDR at 0°

Measured Spectrum: Low-Energy Part

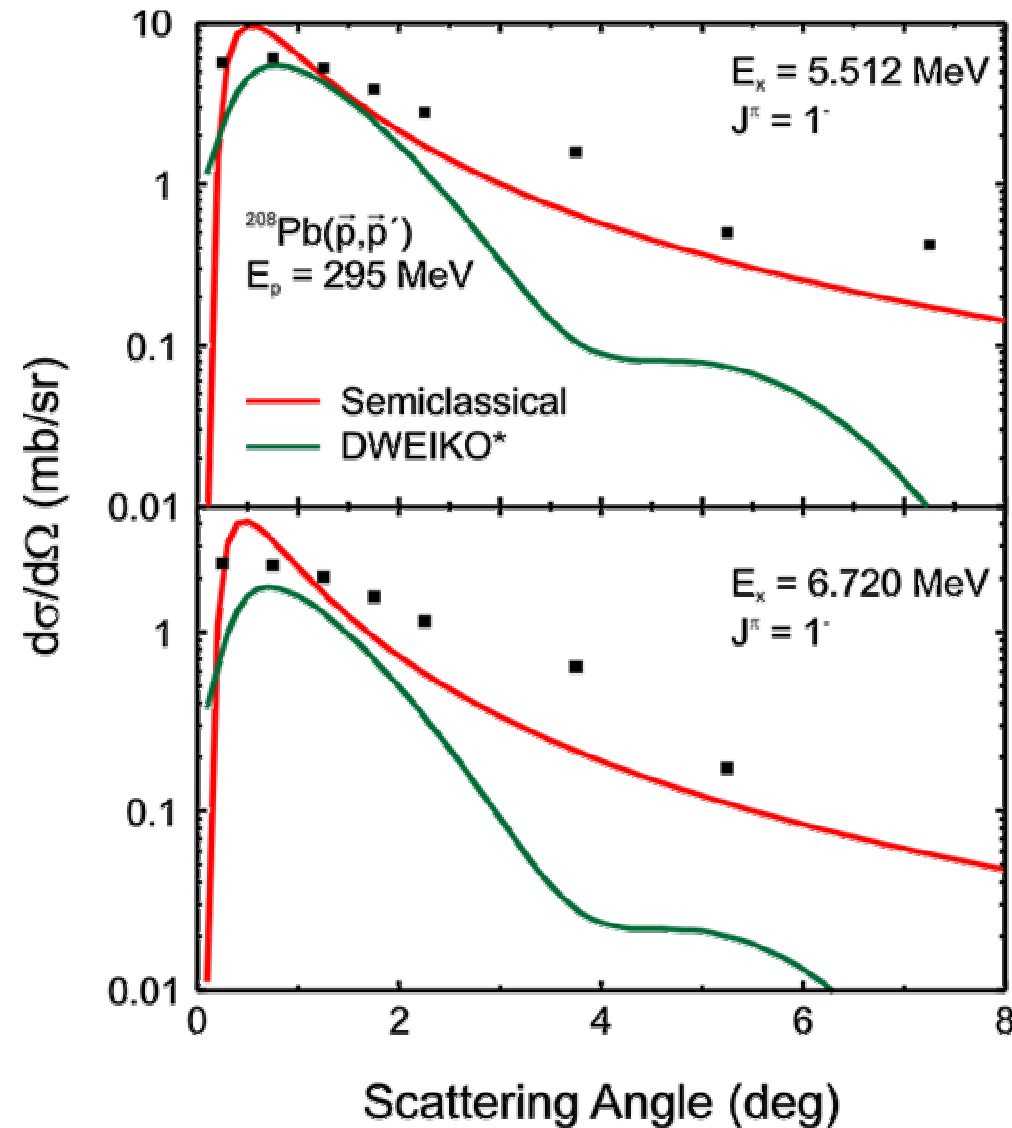


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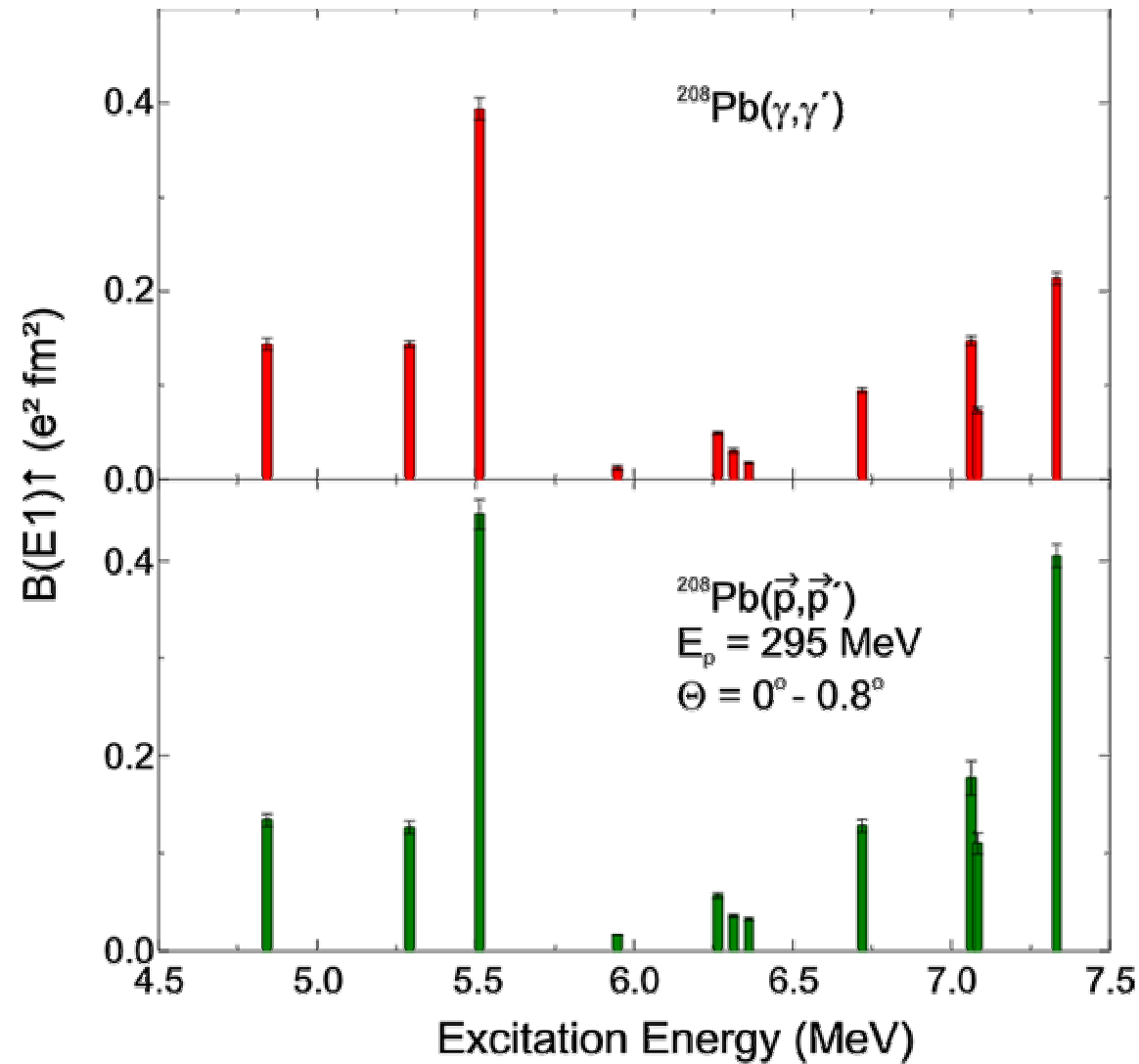
- All electric dipole transitions known from (γ, γ') are observed

Coulomb Excitation of E1 Transitions



*C.A. Bertulani et al., *Comp. Phys. Comm.* 152 (2003) 317

Extracted Transition Strengths





- DWBA calculations of angular distributions including effective nuclear interactions → Coulomb-nuclear interference
- E1/M1 separation
- Completion of the polarization observables measurements

Collaborators



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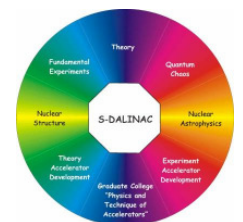
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