Nature of Symmetric and Mixed Symmetric 2^+ States in ^{92}Zr from Electron Scattering*

Abdulrahman Scheikh Obeid

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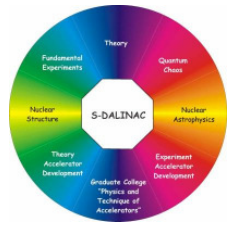
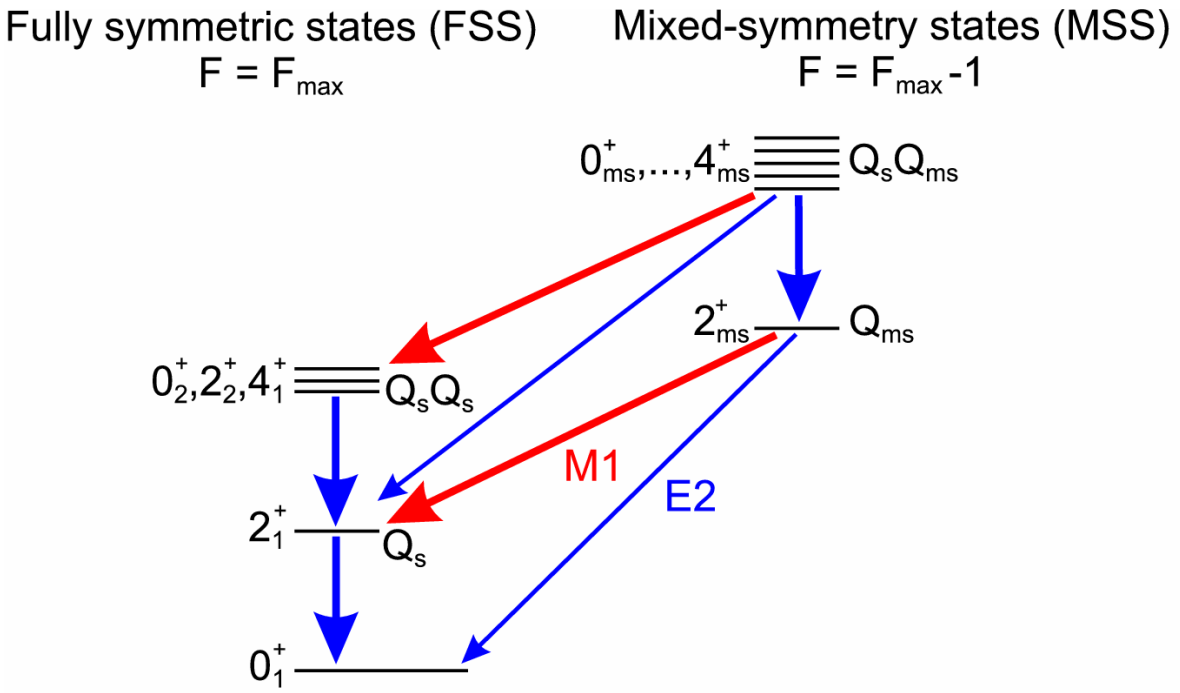
- Motivation
- Experiment
- Analysis and first results
- Summary and outlook

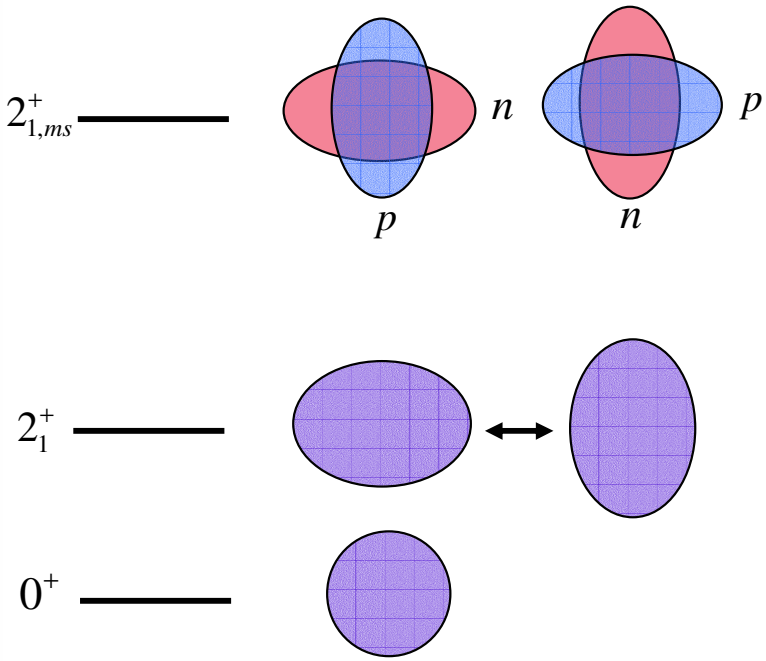
SFB 634



*Supported by the DFG within SFB 634

Motivation





- Strong E2 transitions for decay of Q_s-phonon
- Weakly collective E2 transitions for decay of Q_{ms}-phonon
- Strong M1 transitions for decay of MSS to FSS

Motivation

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- ✓ Measurement of form factor in ^{92}Zr
- ✓ Comparison to the previous measurements on the Z = 52 ^{94}Mo*
- ✓ Comparison to momentum-transfer dependence of the form factor of one-quadrupole phonon states by QPM predictions
- ✓ Extraction of the relative E2 in a model-independent way

*C. Fransen et al., Phys. Rev. C**67** (2003) 024307

Measured spectra at Lintott

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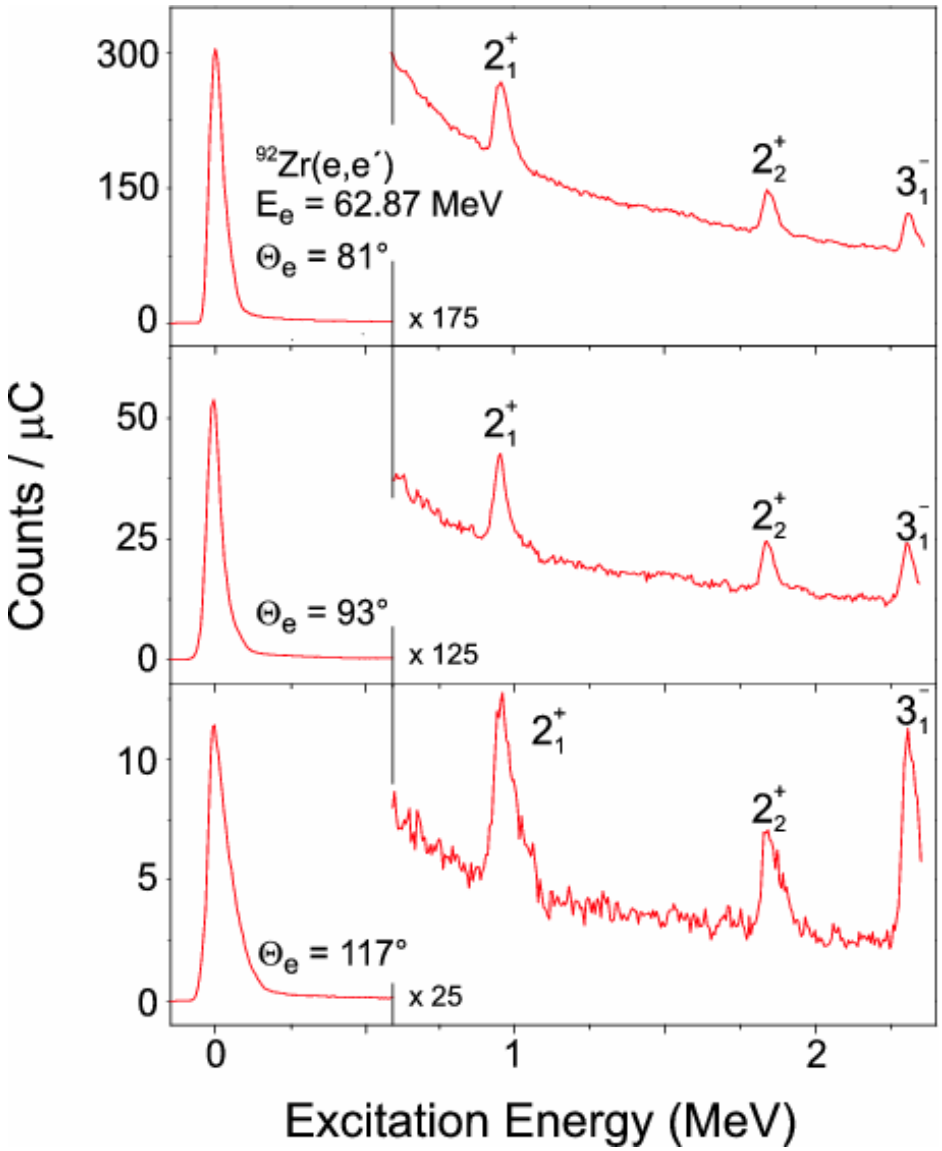
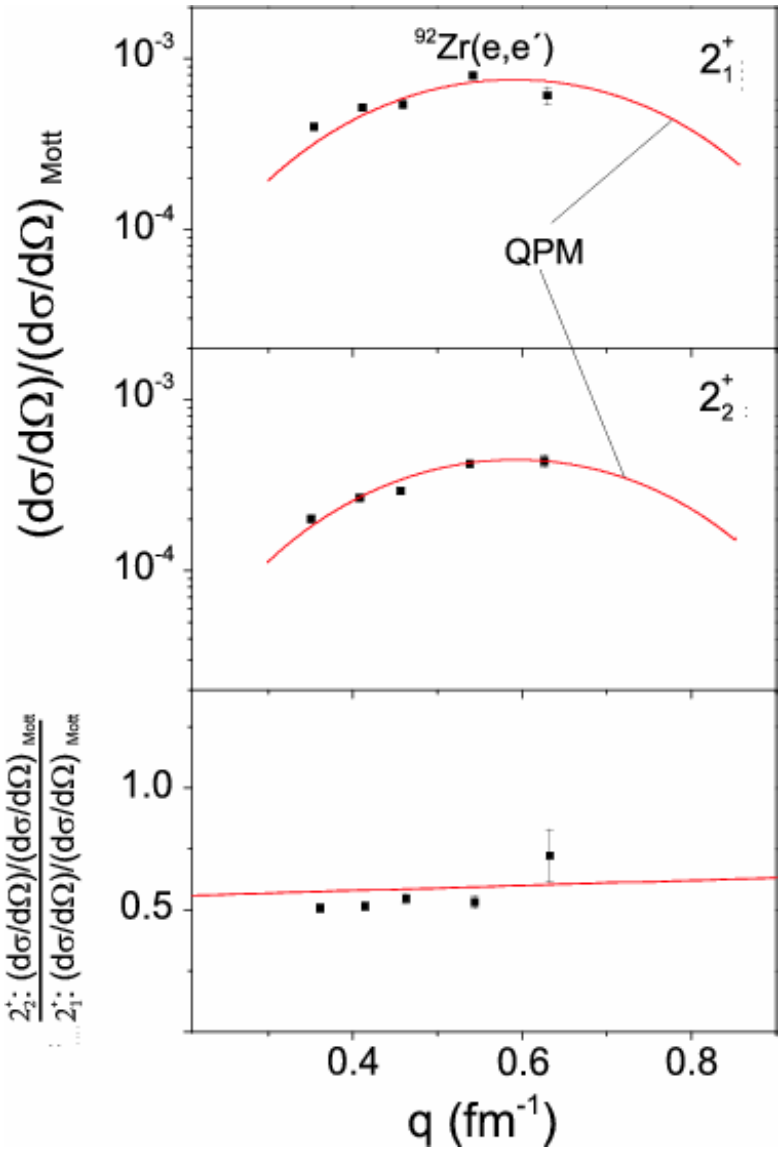


Comparison to QPM



Model-independent extraction of E2 excitation strength

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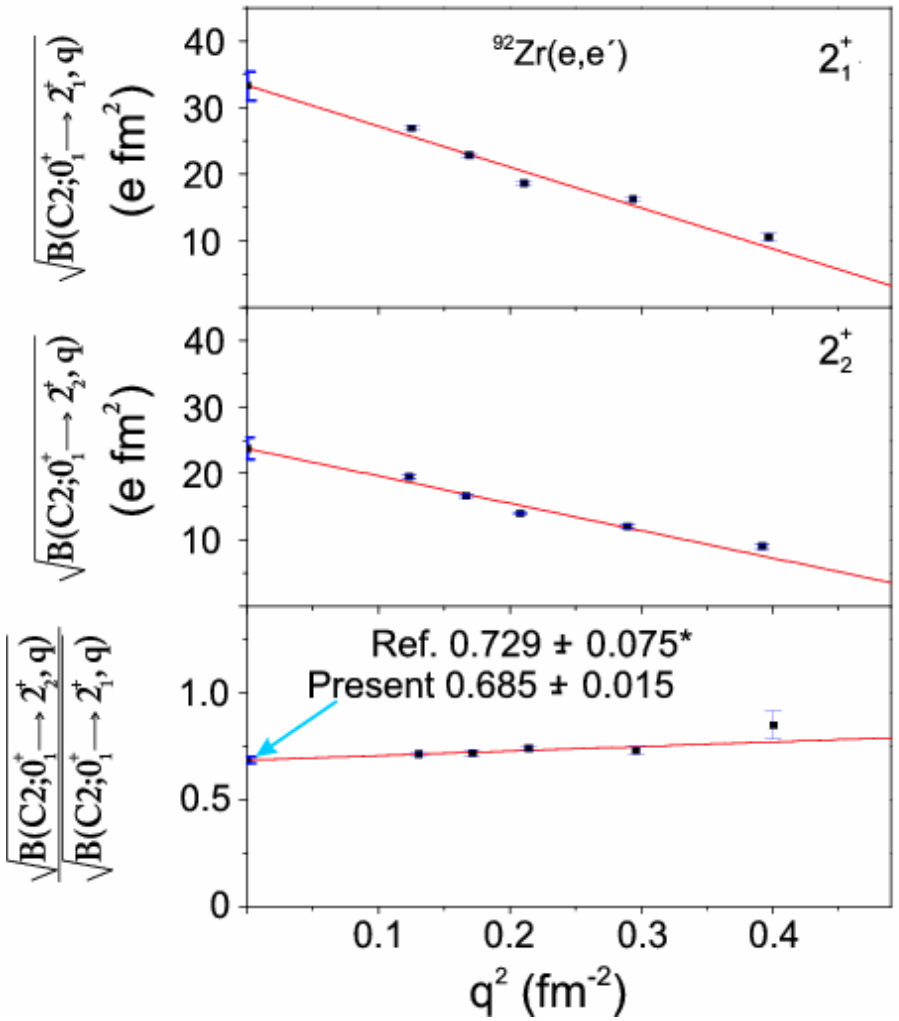
$$\sqrt{B(C2,q)} = \sqrt{B(C2,0)}\left(1 - q^2\frac{R_{tr}^2}{14} + q^4 \ldots\ldots\right)$$



*C. Fransen et al., Phys. C**71** (2005) 054304

Results

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	^{92}Zr(e,e´) E2 Strength in W.u.		Ref. [1], [2]	
	With QPM	PWBA	^{92}Zr(n,n´γ)	^{94}Mo(n,n´γ)
$B(C2;0_1^+ \rightarrow 2_1, k)$	31.62 ± 0.33		32.0 ± 2.5	80.0 ± 1.0
$B(C2;0_1^+ \rightarrow 2_2, k)$	17.22 ± 0.22	15.0 ± 1.3	17.0 ± 2.0	11.0 ± 1.0

[1] C. Fransen et al., Phys. Rev. C**71** (2005) 054304

[2] C. Fransen et al., Phys. Rev. C**67** (2003) 024307

^{92}Zr(p,p´) Spectrum at iThembaLABs

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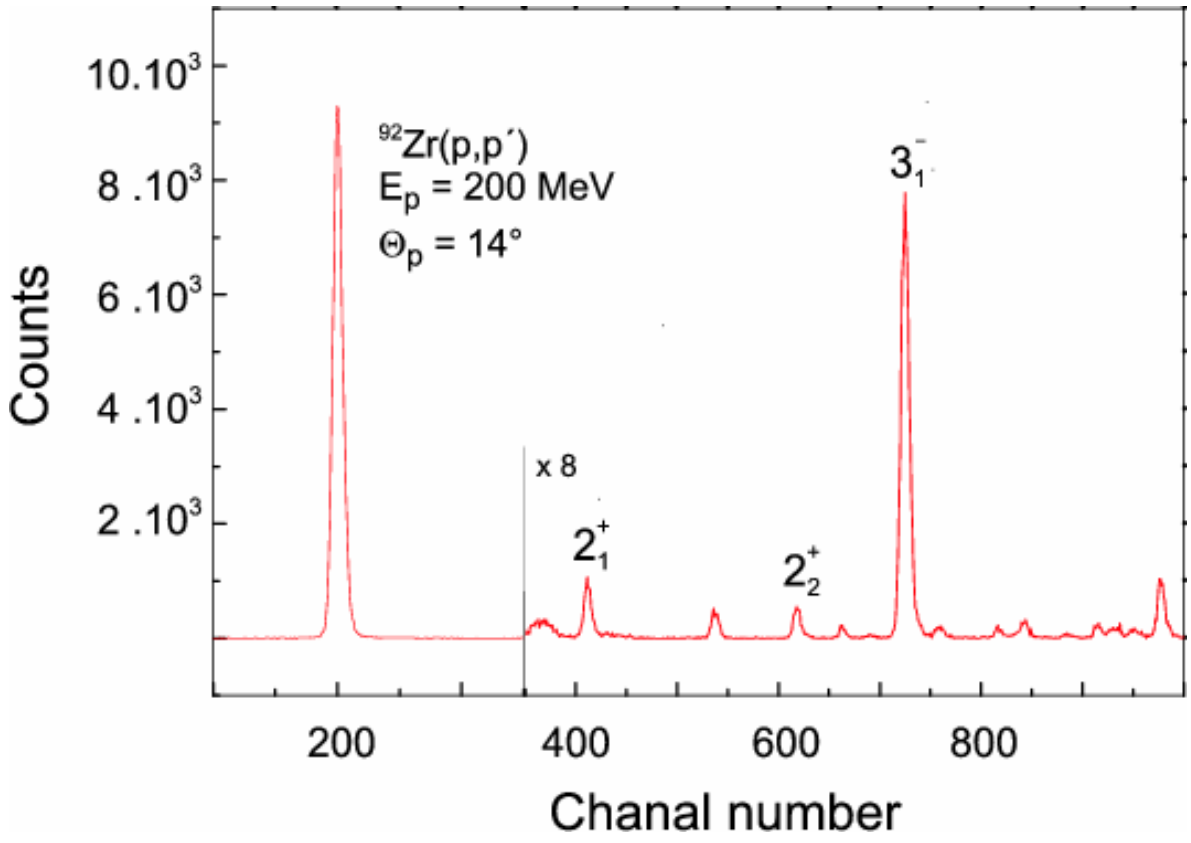
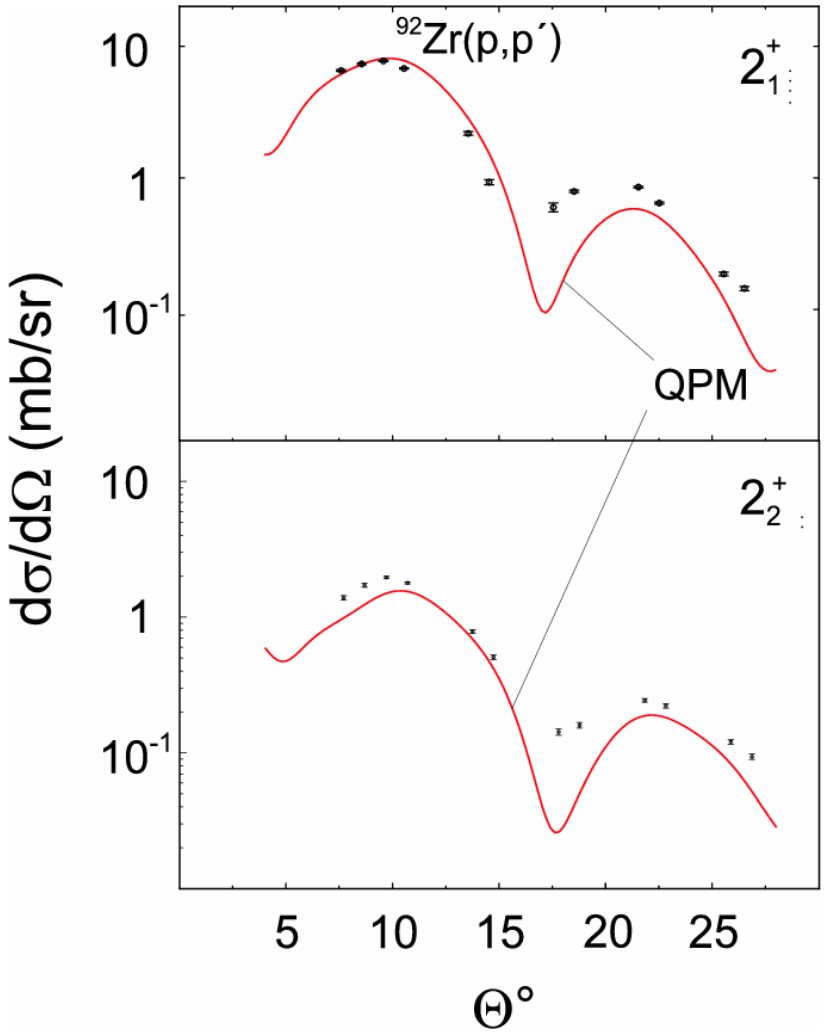


Comparison to QPM



Summary and outlook

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- ✓ High-resolution electron scattering experiments performed
- ✓ B(E2,k) extracted
- ✓ Shell model calculations