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Proton scattering at ^{92}Zr and the investigation of a possible g-boson configuration — ●CHRISTOPHER WALZ, OLEKSIY BURDA, PETER VON NEUMANN-COSEL, and NORBERT PIETRALLA — IKP, TU Darmstadt, Germany

The concept of fully symmetric (FS) and mixed-symmetric (MS) quadrupol phonons as building blocks of low-energy structure in spherical nuclei has been investigated in recent years. The nucleus ^{92}Zr is a well studied example and candidates for the FS and MS quadrupol one-phonon states with $J^\Pi = 2^+$ have already been established [1]. High-resolution- $^{92}\text{Zr}(p,p')$ experiments at 200 MeV were performed at the iThemba LABS in order to study the excitations of low-spin states. The evaluation of the measured cross sections as a function of momentum transfer had supported the one-phonon interpretation of symmetric and mixed-symmetric 2^+ states. In addition the measured momentum-transfer dependence of (p,p') cross sections permits a test of the nature of the 4_1^+ and 4_2^+ states as candidates of possible g-boson configuration with preclominant FS and MS character. Comparisons to QPM and shell model calculations is presented.

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

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