Contribution ID: **30** Type: **not specified**

T=0 pairing along the N=Z line in the g9/2 region

Thursday, 11 April 2019 09:30 (15 minutes)

Enhanced neutron-proton (np) pairing correlations can arise when both particle types occupy the same orbitals. In addition to the T = 1 np pairing phase, the opportunity for isoscalar (T = 0) correlations is also present, especially on the N=Z line. Competition between these np-pairing mechanisms is of much interest. Recent work on ^{92}Pd [1] has indicated the possibility for the existence of a new type of spin-aligned isoscalar np pair. The observation of the β-decaying 16^+ isomer in ^{96}Cd has also revealed evidence for the importance of the T = 0 np interaction at higher spins [2]. Very recently, the gamma rays in the ground state sequence of ^{96}Cd have been observed [3], following decay of the spin-trap isomer, although the ordering of the transitions could not be confirmed. Calculations suggest that spin-aligned pair approximation should contribute significantly to the structure of the states in the sequence, but varying with spins, and may reduce significantly for the 8^+ state [e.g. 4].

To gain further insight into the np-pairing effects, we propose here to use the knockout methodology to populate states in the N=Z systems ^{96}Cd and ^{92}Pd up to 8^+ through (probably 1-neutron) knockout. The aim will be to firmly establish the ordering of the transitions in both nuclei and also to investigate the extent to which the knockout cross-sections might be affected by changes in the underlying structure along the yrast line.

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Session Classification: Proposals