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Shape coexistance in the N=Z nucleus ⁸⁰Zr

Thursday, 11 April 2019 09:00 (15 minutes)

State-of-the-art beyond mean field methods with the Gogny D1S interaction has predicted for the N=Z 80 Zr nucleus five 0⁺ states corresponding to different nuclear shapes within 2.25 MeV, where several rotational and γ -bands are built upon those five 0+ states [1]. We propose to study the rich low-lying energy spectrum of 80 Zr, by using a 1n and 2n knock-out reaction from 81,82 Zr, respectively. The 81,82 Zr fragments will be produced from the fragmentation of a primary 124 Xe beam at 345 MeV.A on a 9 Be target. The reaction fragments will be separated and identified by he BigRIPS separator. The fragments of interest will impinge on a 9 Be target surrounded by a high-purity germanium array (MINIBALL). The final reaction products will be identified by the ZeroDegree spectrometer. Currently T.R. Rodriguez together with J. Tostevin are calculating the spectroscopic factors for the various excited states in order to quantify the population to the various low-lying excited states in 80 Zr at low-energies.

[1] T. R. Rodríguez and J. Luis Egido Physics Letters B 705 (2011) 255–259

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