**Analysis of M1 excitations in 28Si using inelastic proton scattering**

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Isovector and isoscalar spin-flip excitations in even-even *sd*-shell nuclei excited by inelastic proton scattering were considered in [1]. Recently *M*1 excitations in *sd*-shell were also analyzed in [2]. In [2] only strongest excitations of 28Si were discussed. Shell model predicts for 28Si a few of 1+ states with excitation energy lower than 20 MeV. Nearly all of these states can be identified with experimentally observed levels excited in (p,p’) and (e,e’) reactions. Here we analyze the spectrum of 1+ states in 28Si excited in (p,p’) reaction in comparison with theoretical spectroscopic predictions. The calculations were carried out in the *sd* model space with the USDA Hamiltonian [3] using the code NuShellX [4].

The *M*1 excitations in light nuclei are mainly determined by the spin transition density. Current transitions density play only minor importance in observed B(*M*1) value. The B(*M*1) value can be extracted from the (e,e’) scattering experiments. On the other hand only spin transition density determine forward cross section of (p,p’) reaction with excitation of *M*1 states. We analyze forward cross sections of (p,p’) reaction with excitation of 1+ levels in 28Si and determine the possible impact of current density in the B(*M*1) value.

In the excitation of *M*1 states with protons both *T=1* and *T=0* states are excited and only *T=1* states can be excited in (e,e’). The theoretically predicted states can be identified with the observed 1+ levels according to their excitation energy but the strength of the excitations can considerably differ from the theoretical prediction. The possible explanation of this difference may be the isospin mixture.

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