

Structure of the energy levels of $^{53,55,57}\text{Mn}$ from the
($d, ^3\text{He}$) reaction on Fe isotopes at 80 MeV

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A systematic study of the energy spectra and spectroscopic factors in $^{53,55,57}\text{Mn}$ was undertaken. In each isotope about 50 levels have been identified and spectroscopic factors determined for many states of spin/parity $7/2^-$, $1/2^-$, $3/2^-$, $5/2^-$, $1/2^+$, $3/2^+$. Theoretically, these properties have been described in three models: the large shell-model, quasiparticle-core coupling model and the cluster-vibration model. In each model the distribution of the spectroscopic strength over 10 lowest states of each spin/parity has been studied. A reasonable agreement among the results of three models has been obtained, as well as to the experimental data. The comparison between the model predictions in itself is interesting, because in this specific case of a rather light nucleus not far from the closed shell, shell model is applicable. Extensive results are presented in ref.¹⁾

1) N.G.Puttaswamy, W.Oelert, A.Djaloeis, C.Meyer-Böricke, P.Turek, K. Heyde, P.Van Isacker, P.W.M.Glaudemans, V.Lopac and V.Paar, Nucl. Phys., to be published