

High-spin states in Fe<sup>55</sup> and Mn<sup>55</sup>

Y. El Masri, J. Lehmann and J. Vervier  
 Institut de Physique Corpusculaire, Université de Louvain,  
 B - 1340 OTTIGNIES, Belgium

High-spin states in Fe<sup>55</sup> and Mn<sup>55</sup> have been studied by registering the  $\gamma$ -ray spectrum from the Cr<sup>52</sup>( $\alpha$ ,n)Fe<sup>55</sup> and Cr<sup>52</sup>( $\alpha$ ,p)Mn<sup>55</sup> reactions induced by 24-MeV  $\alpha$ -particles accelerated by the cyclotron of the University of Louvain. The direct spectrum, the angular distribution of the various lines and  $\gamma$ - $\gamma$  coincidences have been measured with Ge(Li) detectors ; the results have been analysed using various computer programs. The angular distributions yield information on the level spin, transition multipolarities and on the orientation, with respect to the incident beam, of the initial state for the various transitions ;  $\gamma$ - $\gamma$  coincidences allow to establish the decay scheme.

The following levels have been confirmed or established in Fe<sup>55</sup> and Mn<sup>55</sup> (we give their energies in keV and their probable spin and parity) : Fe<sup>55</sup> : 411 (1/2<sup>-</sup>) ; 930 (5/2<sup>-</sup>) ; 1314 (7/2<sup>-</sup>) ; 2298 (9/2<sup>-</sup>) ; 2535 (11/2<sup>-</sup>) ; 2809 (13/2<sup>-</sup>) ; 3414 (15/2<sup>-</sup>) ; Mn<sup>55</sup> : 125 (7/2<sup>-</sup>) ; 984 (9/2<sup>-</sup>) ; 1292 (11/2<sup>-</sup>). Other states are also populated in these 2 nuclei through the ( $\alpha$ ,n) and ( $\alpha$ ,p) reactions on Cr<sup>52</sup>, but with a lower intensity or a more dubious decay scheme than those just reported.