Level density and γ-strength function for A=56-60 nuclei[1] A.V.
VOINOV, C.R. BRUNE, S.M. GRIMES, M.J. HORNISH, T.N. MASSEY, Ohio
University, Athens, Ohio 45701 — The knowledge of the compound nuclear cross
sections is important in various fields of nuclear science and applications. The level
density and γ-strength function are the main quantities needed for such calculations
and corresponding experimental data are in high demand. Traditionally, the nu-
clear level density below the particle separation energy is determined from neutron
resonance spacing and low-lying discrete levels by means of interpolation function
based on Fermi-gas model. But the question of how reliable these level densities are
for reaction rate calculations remains open. Differential cross sections with ^{3}He and
deuteron beams on A=56-60 nuclei have been measured at Edwards Laboratory of
Ohio University. Level density parameters are obtained and compared to available
systematics. The results on the γ-strength function for ^{56,57}Fe nuclei obtained from
(^{3}He,$\alpha\gamma$) and (^{3}He,^{3}He'γ) reactions measured at Oslo Cyclotron Laboratory will be
presented. The data show a large enhancement relative to existing models in the
low-energy region ($<$3 MeV).

A.V. Voinov
Ohio University

Date submitted: 29 Jun 2006   Electronic form version 1.4