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Study of Nuclear Resonance Spacing for Spherical Nuclei A.N. BEHKAMI, Department of Physics, Fars Science and Research Center, ISLAMIC AZAD UNIVERSITY, IRAN COLLABORATION — Neutron resonance data are the most extensive source of information on nuclear level densities. In this type of experiment the nuclear energy levels are observed at about neutron binding energy, and the number of levels is obtained by counting the resonance in a particular neutron energy intervals. Level spacing information has been obtained from slow neutron resonances (s-wave) data for nuclei with A-values across the whole periodic table. A number of authors have analyzed the neutron resonance data with a Bethe type formula. Although several of these comparisons were reasonably successful, the degree of their success depends in large part on adjustable parameters. In the present study we have made a comparison of the nuclear level spacing calculated with a microscopic theory of interacting fermions. In particular we have investigated the A (mass number) dependence of the level density at essentially constant excitation energy, normally the neutron binding energy. The ratio $D_{Theo}/D_{Exp}$for more than hundred nuclei has been determined. It is found the average value of D_{Theo}/D_{Exp} depends on the magnitude of nuclear pairing and shell. The effect of nuclear pairing and shell will be presented and discussed.

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