

Superalowed beta decay within mean field theory — testing of the standard model

M. Rafalski

University of Warsaw

Theoretical tool that allows for isospin projection of Slater determinants and its applications will be presented. Details of the method will be presented, as well as results obtained by it: isospin mixing in various nuclei, unphysical contribution to the isospin-symmetry breaking inherent to the mean-field approach. Significant dependence of the magnitude of isospin breaking on the parametrization of the nuclear interaction will be pointed, as well as a rough correlation between the isospin mixing parameter and the difference of proton and neutron rms radii. Finally, connection between superallowed beta decay and V_{ud} element of the Cabibbo-Cobayashi-Maskawa will be shown, as well as obtained value of the element.