Abstract

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The macroscopic-microscopic folded-Yukawa approach to providing global nuclear structure data.

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The macroscopic-microscopic model based on the folded-Yukawa single-particle potential and a "finite-range" macroscopic model may be the approach that has provided the most reliable predictions of a *large* number of nuclear-structure properties for *all* nuclei between the proton and neutron drip lines. I will describe the development philosophy that behind the reason for its usefulness. Examples of quantities modeled within the same model framework are, nuclear masses, ground-state level structure, including spins, ground-state shapes, fission barriers, heavy-ion fusion barriers, sub-barrier fusion cross sections, β-decay half-lives and delayed neutron emission probabilities, shape coexistence, and α-decay Q_α energies to name a few. I will review some milestones during its development and the current status, with some specific example of results for fission-fragment yield distributions, superheavy element properties and beta decay.

More in depth discussion can be downloaded from
http://t2.lanl.gov/nis/molleretal/