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Theoretical wonder for New Facilities with Rare Isotope Beams

The existence limit of nuclei and the origin of the heavy elements are fundamental problems in modern science. The relativistic density functional theory starts from a universal density functional and has achieved great successes in describing many nuclear phenomena. New physics wonder may result from the strong coupling between theory and experiment perspectives. In this talk, the predictive power of PC-PK1 is demonstrated, physics around the neutron drip line and $N=Z$ nuclei are discussed, status of the DRHBC mass table collaboration is introduced as well as the effects of the continuum and deformation and the related topics. Relativistic density functional theory in 3D lattice and its time-dependent version for Linear-chain, Chiral dynamics, Fission, etc are briefly mentioned. Strategy to build density functional based on QCD-spirited interaction and ab initio calculation are outlined.

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