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## **CHALLENGES IN LOW-ENERGY NUCLEAR PHYSICS**

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Understanding nuclei is a quantum many-body problem of incredible richness and diversity and studies of nuclei address some of the great challenges that are common throughout modern science. Nuclear structure research strives to build a unified and comprehensive microscopic framework in which bulk nuclear properties, nuclear excitations, and nuclear reactions can all be described. A new and exciting focus in this endeavor lies in the description of exotic and short-lived nuclei at the limits of proton-to-neutron asymmetry, mass, and charge.

In this talk, experimental and theoretical advances in rare isotope research will be reviewed in the context of the main scientific questions. Particular attention will be given to the worldwide radioactive beam program and to the progress in theoretical studies of nuclei due to the advent of extreme-scale computing platforms.