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# Recent Developments in Shape Coexistence Studies

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The information on collective properties of nuclei far from stability has dramatically improved in recent years due to the availability of radioactive ion beams used, e.g., for Coulomb excitation studies both below the Coulomb barrier and at relativistic energies. These studies are complemented by spectroscopic studies and lifetime measurements applied to other reaction mechanisms suitable for producing exotic nuclei.
Over the last few years we have carried out a research program using these complementary techniques, and applied them to several mass regions, where shape coexistence and a sudden evolution of nuclear shapes are expected. In this presentation recent results for two such mass regions will be presented, the A~70 nuclei at and beyond the N=Z line and neutron-rich nuclei in the A~100 region. In the first case the closeness and influence of the proton drip line on the shape properties is being explored, while in the second case the evolution of nuclear shapes beyond the onset of strong deformation at N=60 (in particular in Sr and Zr isotopes) as well as the importance of the triaxial degree of freedom in the Mo and Ru isotopes at N~64-70 are of strong current interest.
In this presentation recent results will be presented that were obtained using several different facilities: On one hand, using stable beams from GANIL and the combination of the VAMOS and EXOGAM spectrometers, heavy-ion induced fission was used to obtain new lifetime results in several Zr, Mo, Ru and Pd isotopes. On the other hand radioactive neutron-rich beams from the CERN-ISOLDE and ANL-Caribu facilities were used to perform Coulomb excitation experiments yielding new electro-magnetic matrix elements in the same nuclei. Finally, the even more exotic proton-rich nuclei around A~70 were studied using relativistic Coulomb excitation of fragmentation beams from the RIBF facility at RIKEN.

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