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Global ab initio calculations for the structure of exotic nuclei

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Breakthroughs in our treatment of the many-body problem and nuclear forces are rapidly transforming modern nuclear theory into a true first-principles discipline. This allows us to address some of the most exciting questions at the frontiers of nuclear structure and physics beyond the standard model.
In this talk I will briefly outline our many-body approach, the valence-space in-medium similarity renormalization group, and how recent advances now allow for global converged calculations of open-shell nuclei to the 208Pb region and beyond. In particular, I will focus on key topics in nuclear structure such as predictions of the proton and neutron driplines and evolution of magic numbers throughout the light and medium-mass regions, including new insights on the behavior of N=28,32,34 from the pf through the lower sd-shells as well as the existence of 28O including continuum degrees of freedom.

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Session Classification: Shell migration at the neutron numbers N=32,34 around Ca