Title : Is there an end to the periodic table?

Abstract :

This year marks the 150th anniversary of the formulation of the periodic table created by Dmitry Mendeleev. Accordingly, the United Nations proclaimed 2019 as the International Year of the Periodic Table of Chemical Elements. At 150 years old, the table is still growing. In 2016, four new elements were added: nihonium, moscovium, tennessine and oganesson. These elements define the current upper limits of mass and atomic numbers. As such, they carry the potential to transform the way we currently understand nuclear and atomic physics, and chemistry. All elements with more than 103 protons are labeled as \" superheavy,\" and are part of a vast, totally unknown territory of these nuclei that scientists are trying to uncover. Questions motivating the search for these systems include: What are the heaviest nuclei and atoms that can exist? Are superheavy systems different from lighter nuclear species? Is there an island of very long-lived nuclei? Can superheavy nuclei be produced in stellar explosions? Questions such as these provide formidable challenges for both experiment and theory. This talk will review perspectives in this field of research.