Wednesday

May 17th

At 3:45 PM

Physics Experiments with the Heaviest Elements: from TASCA at GSI, over ISOL at JAEA, to the Th-229 "nuclear clock" isomer.

Abstract:

In my talk, I will present the breadth of physics research with the heaviest elements using recent highlight examples. In the first part, I will give an overview of the superheavy element synthesis program at TASCA at GSI Darmstadt, where flerovium (Z=114), moscovium (Z=115), and tennessine (Z=117) have been studied, and sensitive search experiments for the yet unknown elements Z=119 and 120 have been carried out. As a second example, I will discuss atomic physics studies on the ionization potential of the heaviest actinides, which have been carried out at the ISOL facility at JAEA Tokai, Japan. Finally, recent experiments bridging atomic and nuclear physics, namely on the ultra-low-lying ~7-eV nuclear isomer in Th-229, will be presented. This isomer was finally unambiguously detected in experiments performed at LMU Munich, Germany, and appears suitable for the development of a "nuclear clock" with unprecedented accuracy.

I will conclude with an outlook including the developments at HIM Mainz and GSI Darmstadt towards the construction of a new superconducting linac for future SHE studies.

TEXAS A&M UNIVERSITY

CYCLOTRON COLLOQUIUM

Dr. Christoph E. Düllmann

Professor

GSI Helmholtz Institute Mainz

Johannes Gutenberg University Mainz

CYCLOTRON INSTITUTE

Room 228

Refreshments will be served at 3:30 pm