

# CENTRE D'ETUDES NUCLÉAIRES DE BORDEAUX-GRADIGNAN

**Jeudi 16 Octobre 2014**

à

**11H00**

*Un café sera servi à partir de 10h45*

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## **Shape coexistence in gold, thallium and astatine isotopes studied by in-source laser spectroscopy at ISOLDE**

The competition between spherical and deformed configurations at low energy gives rise to shape coexistence in the neutron-deficient isotopes around  $Z \sim 82$  and  $N \sim 104$ , while on the neutron-rich side effects due to octupole deformation in the vicinity of  $N \sim 133$  could be important. In order to determine to which extend the ground and isomeric states of these nuclides are affected by these phenomena, an extended campaign of investigation of changes in the mean-square charge radii is being conducted at ISOLDE by the Windmill Collaboration. The measurements rely on the high sensitivity provided by a combination of the in-source laser spectroscopy with RILIS, ISOLDE mass separation and Windmill spectroscopy setup.

In this contribution, we will present the systematics of charge radii recently obtained for the light thallium isotopes, the astatine chain and the lightest isotopes  $^{177-182}\text{Au}$ . In the gold and astatine cases, the Multi-Reflection Time-of-Flight (MR-ToF) mass separation technique, involving the ISOLTRAP collaboration, was used for the first time. With the newly-acquired data, the gold chain demonstrates the unique behaviour whereby the transition occurs from the nearly-spherical shapes in  $^{187-197}\text{Au}$ , to strongly-deformed in  $^{180-186}\text{Au}$ , and finally back to more spherical ones in  $^{177,179}\text{Au}$ .

**Salle des Séminaires du CENBG**

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