



Contribution ID: 24

Type: **Invited**

Laser Spectroscopy of Nobelium Isotopes at GSI

Wednesday, 7 December 2016 09:40 (30 minutes)

Precision measurements of atomic properties by laser spectroscopy allow probing an element's electronic structure. In addition, measurements of the hyperfine splitting and the isotope shift of spectral lines gives a handle to obtain nuclear properties such as spins and moments.

Despite significant progress in laser spectroscopy in recent years, no experimental data on atomic levels of elements beyond fermium are available to date. However, their electronic structure is strongly affected by relativistic effects, quantum electrodynamics, and electron correlations. Moreover, many nuclear spin assignments are based on systematics.

A very sensitive method based on a two-step laser-ionization scheme has been developed for optical spectroscopy of nobelium. In 2015, for the first time atomic levels including several high-lying Rydberg-states in No-254 atoms were identified in an experiment at GSI Darmstadt. Moreover, the isotope shift in the isotopes No-252,253 was investigated.

In this contribution, recent experimental results will be presented and compared to theoretical predictions. Future perspectives for measurements in even heavier elements will be discussed.

Primary author: BLOCK, Michael

Presenter: BLOCK, Michael

Session Classification: Nuclear Structure 1