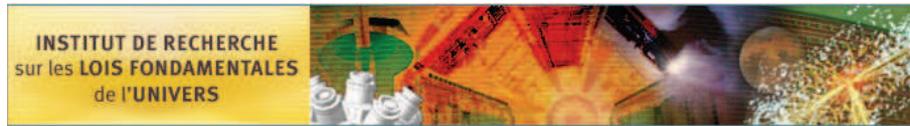


# Service de Physique Nucléaire



## Séminaire

le vendredi 19 septembre 2014 à 11h

CEA Saclay, Orme des Merisiers, Bât. 703, Salle 135

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### **Production of highly charged ions with an EBIS for HIE-ISOLDE and TSR@ISOLDE at CERN**

Andrey Shornikov

CERN

ISOLDE facility at CERN provides the user community with access to diverse experiments with exotic ions produced by 1.4 GeV proton beam. These experiments include re-acceleration of exotic ions to the energies above Coulomb barrier for fixed target experiments. Successful re-acceleration is only possible with ions in high charge states. For selective breeding of charge states up to required mass-to-charge ratio  $A/q$  of 3-4.5 the best suitable technique is a charge breeder (CB) based on Electron Beam Ion Source (EBIS) technology – an ECB.

This presentation gives an overview of the recent activities at CERN aiming to build a high performance ECB featuring High Energy Current and Compression (HEC2) electron beam. This development is motivated by the ongoing upgrade of the ISOLDE facility to HIE-ISOLDE, as well as the proposal for installation of the TSR storage ring behind the HIE-ISOLDE linac (TSR@ISOLDE). HEC2 is also suggested as a prototype CB for the future EURISOL facility, and a possible ion source for the LHC heavy ion program. The presentation covers underlying physics of breeding high charge states with an ECB, perspectives, limits, engineering challenges and the first experimental results achieved in 2013 in cooperation with the Advanced Ion Source group of the Brookhaven National Laboratory (USA).

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*Le café sera servi 10 minutes avant*

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