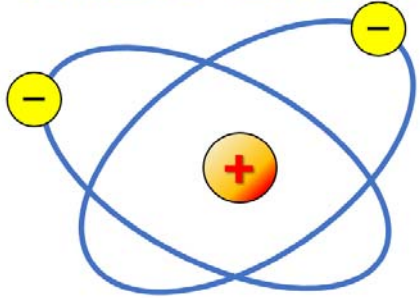


**NIBS 2020**



**online**

**September 10<sup>th</sup>, 2020**

# **FUNDAMENTALS AND DIAGNOSTICS HIGHLIGHTS**

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# Source fundamentals and diagnostics

## Wednesday, September 2<sup>nd</sup>.

- Validation of the Distribution of **Stripping Loss Neutrals** in the Accelerator of the Negative Ion Source, Katsunori IKEDA
- Different characteristics of **plasma meniscus** formation between positive and negative beam extraction, Kenichi NAGAOKA
- Development of the directional Langmuir probe for the charged **particle flow** measurement, Shingo MASAKI
- Profile of the LHD negative ion beam source at the **plasma meniscus** from numerical beam calculation based on experimental observation Jelle SLIEF
- Probe for in situ measurement of **work function** and cesium dynamics, Pranjal SINGH
- **Correction algorithm** for cavity ring down based anion density measurement in a negative ion source having continuously fed cesium vapour, Debrup MUKHOPADHYAY

# Source fundamentals and diagnostics

## Thursday, September 3<sup>rd</sup>.

- Are resonance phenomena creating **instabilities in the magnetic filter** region in a low-temperature plasma? Miralbrup SHAH
- **BTR** code for NBI Design and Optimization DLOUGACH Eugenia
- Investigation of the negative ionization of hydrogen particles on metal surfaces with low **work function**, Ivan GAINULLIN
- Numerical modeling of the **electrons confinement** in the multicusp magnetic trap, Viktor KLENOV
- Impact of operational parameters on single **beamlet deflection** in a negative ion source for NBI applications, Andrew HURLBATT
- Experiments on **Photo-Assisted O<sup>-</sup> and Al<sup>-</sup> Production** with a Cesium Sputter Ion Source, Olli TARVAINEN

# Source fundamentals and diagnostics

## Friday September 4<sup>th</sup>.

- Interface Boundary Conditions for **Global Models** of Multi-Chamber Negative Hydrogen Ion Sources, Sergey AVERKIN
- Quantifying the Cesium and H<sup>-</sup> Densities Inside the LANSCE H<sup>-</sup> Ion Source with **Laser Absorption** Techniques, David KLEINJAN
- **Modeling filaments** in H<sup>-</sup> ion source from the first principles Nikolai YAMPOLSKY
- **Transport** of a negative ion beam through a hydrogen plasma Enrique HENESTROZA.

# Source fundamentals and diagnostics

## Tuesday September 8<sup>th</sup>.

- Extraction of Negative Hydrogen Ions through a Plasma Electrode **Covered by a Ta or Ti Foil**, Kenta MAESHIRO
- Plasma **Electrode Shape** Suitable for Negative Hydrogen Ion Production, Keita BITO
- Velocity distribution functions of **hydrogen atoms** in ion source discharges, Tatsuhiko TOKAI,
- The Cs-free Negative Hydrogen Ion Source Project at KAERI: A New Concept **Multi-Pulsed Ion Source**, Sung-Ryul HUH
- Study of the multi-driver **decoupling model** of RF negative ion sources, Na WANG
- Some technical verification on infra-red **temperature measurement**, Chao SHI

# Source fundamentals and diagnostics

## Wednesday, September 9<sup>th</sup>.

- **High-speed Emittance** Measurements for Beams Extracted from J-PARC RF Ion Source, Takanori SHIBATA
- **Primary electron** analysis to improve the negative ion uniformity toward ITER-class long pulse and high power negative ion sources, Yuji SHIMABUKURO
- Issues in the measured values of **Langmuir and photo-detachment probes** measuring Cs-seeded plasmas, Katsuyoshi TSUMORI
- Prediction of negative hydrogen ion density in permanent magnet-based helicon ion source (HELEN) using **deep learning techniques**, Vipin SHUKLA.

# Source fundamentals and diagnostics

## Thursday, September 10<sup>th</sup>.

- Study of response of negative ion beam to bias voltage in **phase space**, Masashi KISAKI
- Analysis of plasma characteristics of high-power radio frequency negative ion source based on **Langmuir probe**, Yongjian XU.
- Study of population dynamics of excited atomic hydrogen in negative hydrogen ion sources base on **collisional radiative** model, Zengshan LI
- BTR code Recent Modifications for **Multi-Run Operation**, Eugenia DLOUGACH

# Summary

- **State of the art negative ion sources improve their performance based on better understanding on fundamental processes confirmed by plasma and beam diagnostics.**
- **Tools like beam trajectory simulation codes necessary for theoretical analyses of the observed plasma/beam behavior are continuously upgraded.**
- **Steady advancement of science on “negative ion, beams and sources” has been confirmed at this conference.**