



Contribution ID: 104

Type: **Invited Oral**

Feasibility Study of High Intensity Lithium Beam Production for Directional Pulsed Neutron Flux Generation

Monday, 18 September 2023 11:20 (30 minutes)

A compact accelerator-driven neutron generator with a lithium beam driver can generate neutrons in a forward direction, even using incident beam energy at a near-threshold energy. Especially for medical and industrial applications, the ability to suppress unwanted radiation to patients is a major advantage. However, it is difficult to supply a high-intensity lithium-ion beam, and its practical application has been considered impossible. Therefore, to solve the most important issue, the lack of ion flux, a direct plasma injection method was adopted. In this method, pulsed high-density plasma from a metallic lithium foil generated by laser ablation is efficiently injected and accelerated by a radio-frequency quadrupole linear accelerator (RFQ linac). As a result, a peak beam current of 35 mA, which is higher than that of conventional ion sources, can be obtained. This demonstrated the feasibility of constructing a neutron generator using inverse kinematics scenario.

Funding Agency

Email Address

okamura@bnl.gov

I have read the Code of Conduct to attend ICIS2023.

Yes

Presenter if not the submitter of this abstract

Primary authors: Dr CASSISA, Anastasia (Nuclear Physics Institute of the Czech Academy of Science); CAN-NAVÓ, Antonino (Nuclear Physics Institute of the Czech Academy of Science); Dr CECCIO, Giovanni (Nuclear Physics Institute of the Czech Academy of Science); TAKAHASHI, Kazumasa (Nagaoka University of Technology); OKAMURA, Masahiro (Brookhaven National Laboratory); Dr IKEDA, Shunsuke (BROOKHAVEN NATIONAL LABORATORY); Dr KANESUE, Takeshi (Brookhaven National Laboratory)

Presenter: OKAMURA, Masahiro (Brookhaven National Laboratory)