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Development of liquid lithium target in crucible for laser ion source

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A liquid lithium target system is being developed for laser ion sources. Existing laser ion sources are operated at the repetition rate of the order of 1 Hz. The limitation stems from the use of solid laser targets because of the craters created and the need to provide a fresh surface by either repositioning the laser beam or the target. In addition, an enormously large surface area is needed for long-term operation. This limits the total yield of lithium ions and the application of laser ion sources. To dramatically increase the repetition rate, we propose the use of a liquid lithium target in a crucible because a liquid surface shape is recovered by itself after laser irradiation. The establishment of a liquid target system is an important objective for the development of the intense lithium beam driver for a clean compact source of a directional neutron beam. In the conference, the concept and design of experimental apparatus for the development will be presented.

Footnotes

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Primary author: IKEDA, Shunsuke (Brookhaven National Laboratory)

Co-authors: CANNAVÓ, Antonino (Brookhaven National Laboratory); OKAMURA, Masahiro (Brookhaven National Laboratory); KANESUE, Takeshi (Brookhaven National Laboratory)

Presenter: IKEDA, Shunsuke (Brookhaven National Laboratory)

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