



535th ASRC Seminar



Date: 13:30 ~15:00, 20 November

Location: Meeting room 302, ASRC Building

Speaker: Dr. Mamiko Nishiuchi

(Kansai Photon Science Institute, JAEA)

Title: Multi-charged heavy ion acceleration
from the ultra-intense short pulse laser
system interacting with the metal target

Experimental demonstration of multi-charged heavy ion acceleration from the interaction between the ultra-intense short pulse laser system and the metal target is presented. Al ions are accelerated up to 12 MeV/u (324 MeV total energy). To our knowledge, this is far the highest energy ever reported for the case of acceleration of the heavy ions produced by the <math><10\text{ J}</math> laser energy of 200TW class Ti:sapphire laser system. Adding to that, thanks to the extraordinary high intensity laser field of $\sim 10^{21}\text{ W cm}^{-2}$, the accelerated ions are almost fully stripped, having high charge to mass ratio (Q/M). Our results show that the “laser-accelerated ion” is one of the promising way for realizing high Q/M and high current density heavy ion beam. This type of ion source shows the possibility of substituting the front end of the conventional accelerator system, such as ion source, linac and drift tube linac (DTL).



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