

CAMT Seminar

“High thrust-over-power electric propulsion”

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Date: April 3rd, 2015 (Fri) 14:00 -15:00

Location: Room U1M-303

Abstract

In Electric propulsion for space vehicles that uses plasma has the advantage that the jet velocity is higher than in chemical propulsion. This higher velocity leads to propellant saving due to the higher ratio of thrust over mass flow rate. However, the higher thrust over mass flow rate results in a lower ratio of thrust over power, reflecting the usual trade-off between saving propellant and saving power. Since electric power in space is limited, electric propulsion usually provides a low thrust only. Nevertheless, there is an increased interest in electric thrusters that could provide a high and also variable thrust. We have recently demonstrated that for a fixed deposited power in the ions, the momentum delivered by the electric force is larger if the accelerated ions collide with neutrals during the acceleration. The mechanism of such thrust enhancement and our experiments confirming our theoretical predictions will be described. I will discuss the challenges in realizing this concept for an electric thruster for space vehicles

(Host: Satoshi Hamaguchi Ext:7913)