

## Concept Exploration of Impact Fast Ignition

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### 【Outline of survey】

Impact Fast Ignition (IFI) is a new ignition scheme, where a super-velocity impactor collides with a pre-compressed fusion fuel to trigger thermo-nuclear ignition. The IFI scheme has a potential to realize ignition with much less laser energy than that required for conventional central ignition and with better predictability than that of fast ignition. For concept exploration of IFI, we set the following three step milestones. 1) To demonstrate a super-speed (1000 km/s) flyer. 2) To increase dynamic pressure by spherical convergence. 3) To increase fusion neutron by an order of magnitude in integrated experiments where a pre-compressed fuel will be heated by an impactor.

### 【Expected results】

A progress of new fusion scheme is generally categorized in three phases: concept exploration, proof-of-principle, and concept extension. Conventional central ignition and fast ignition schemes are in the concept extension and the proof-of-principle phases, respectively, whereas IFI is in the concept exploration phase. After the present study, we expect that IFI will be in the proof-of-principle phase.

### 【References by the principal researcher】

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【Term of project】 FY2006 - 2010

【Budget allocation】 18,200,000 yen

【Homepage address】

<http://www.ile.osaka-u.ac.jp/research/phi/>