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We are preparing an ice-pellet-injection system to CHS. Pellets of frozen hydrogen and deuterium are injected into CHS by means of a single-shot pneumatic gun. A pellet is produced in a disk inside the injector. Its length is 1.4 mm and a diameter is 1.0 or 1.4 mm ϕ . It makes use of helium as propellant gas, and a pellet is accelerated up to a velocity of 1.0 km/sec depending on driving helium gas pressure. The Pellet-injection system consists of a pellet injector, and four chambers for one-stage differential pumping and measurements of pellet characteristics. A pellet travels in a long drift tube of 1/4 inches ϕ . Flight path of a pellet from production point to CHS is about 10 m in length with 70 cm difference of elevation. A pellet is injected roughly perpendicularly to the magnetic field lines of CHS. An incident angle can be varied in a cone of ± 10 degrees, covering over an area between plasma center and edge. The pellet velocity and the number of particles are monitored using a couple of He-Ne lasers and photosensors. The injection timing of the pellet to plasma can be adjusted within one msec during plasma discharge. Ablation of the pellet in a plasma is

monitored both with a CCD camera integrated for 16 msec, and a gated image intensifier.

The first trial of ice pellet injection to CHS was done on NBI heated plasma. Hydrogen pellet velocity was about 300 m/sec at 1.4 MPa of helium gas pressure. Increase in electron density and stored energy(W_{dia}) was observed. The data are under analysis.

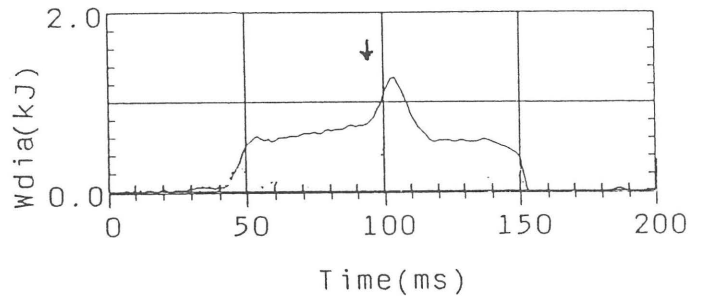


Fig.2 Time evolution of the plasma stored energy(W_{dia}) in the discharge with hydrogen pellet injection. The arrow indicates the timing of the pellet injection.

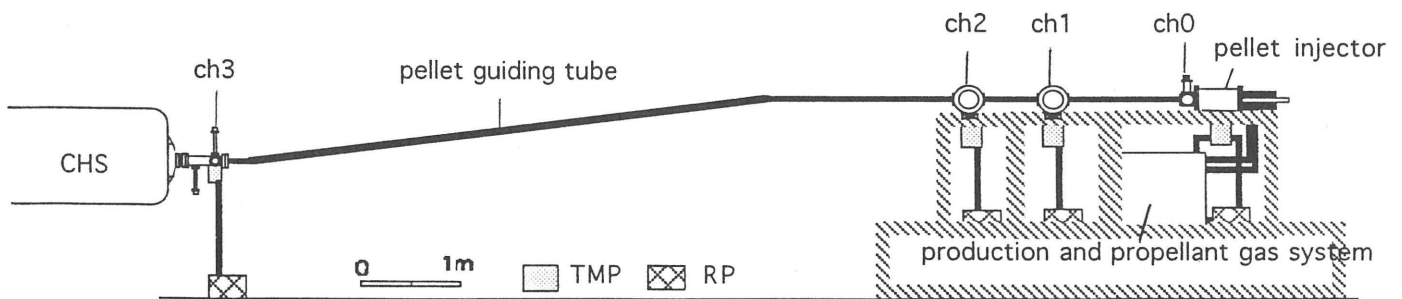


Fig.1 The schematic view of an ice-pellet-injection system to CHS. One stage differential pumping is done in the ch0 chamber. A shape of a pellet is monitored by shadowgraph also at ch0. He-Ne lasers and photosensors are set at each chambers(ch0 - ch3) for the pellet velocity measurement. An incident angle of pellet to CHS is varied inside the ch3 chamber.