## **Development of Divertor Simulation Research in the GAMMA 10/PDX Tandem Mirror**

H<sub>2</sub> gas 0

0

Argas 0 300 650 1000 1000 1000

Plenum Pressure (mbar)

0 0 500 1000 1000

## **World Largest Tandem Mirror GAMMA 10/PDX**

CENTRAL

PLUG / | ANCHOR

BARRIER (Minimum - B)

MHD Stabilizing

Plasma Research Center, University of Tsukuba Y. Nakashima, et al.,

**Experiment by ECH** 

160

Horizontal [pixel]

40

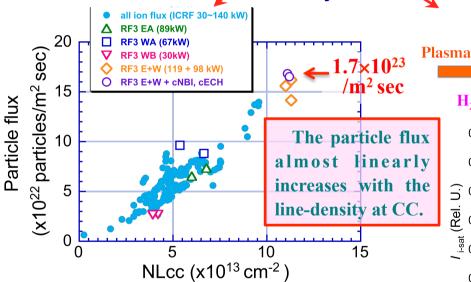
20

320

We have succeeded for the first time in achieving plasma detachment of high temperature plasma equivalent to the SOL plasma of tokamaks in large tandem mirror device.

by Gas Injection

Particle Flux vs Plasma Line-density at CC



Additional ICRF heating in the anchor-cells significantly increases the density in both the anchor and the central cells, which attained the highest particle flux up to  $1.7 \times 10^{23}$ particles/m<sup>2</sup> s at the end-mirror exit.

V-shaped target probe #18  $N_{\rm o}, T_{\rm o}$ probe #1 (Arb. Detached Langmuir probe Corner detector (Calorimeter &  $I_{\mathrm{i-sat}}$ Time (ms) Calorimeter Detachment Ar, Xe Vertical [pixel] 0.6 80 N<sub>e</sub>Div (x1016 60 0.5 40 0.4 (Rel. U.) 20 240 m-3), 160 320 100 Attachment 10 <sub>e</sub> Div (eV) 80 60 0.1

**Detached Plasma Generation Detach – Attach Transition** 

Massive gas injection of H, and noble (Ar, Xe) gas causes electron cooling and a significant reduction of ion flux on the target.