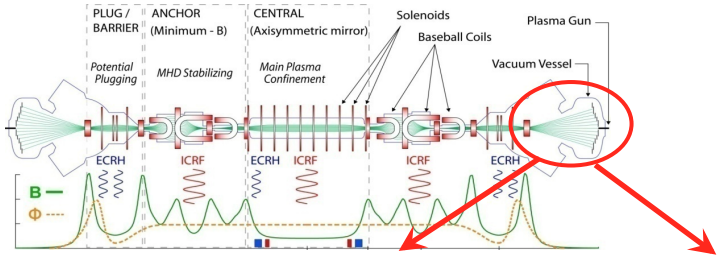
Recent Progress of Divertor Simulation Research Using the GAMMA 10/PDX Tandem Mirror *EX/P8-42*

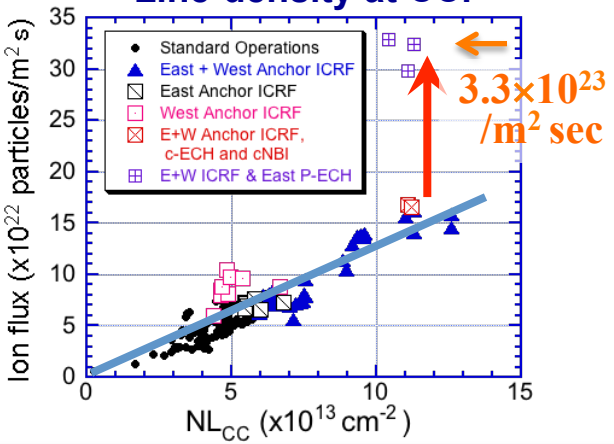
Plasma Research Center, University of Tsukuba
***Y. Nakashima**, et al.,*

World Largest Tandem Mirror GAMMA 10/PDX

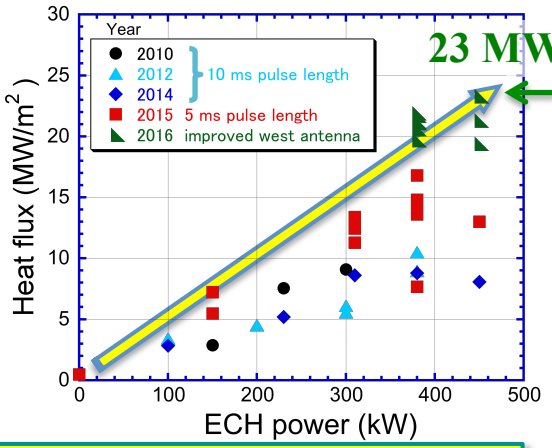


We have succeeded in achieving **plasma detachment** from high ion temperature plasma (T_i ~150 eV) and characterizing the effect on **radiation cooling** in various radiator gases (Ne, N_2, Ar, Xe).

Particle Flux vs Plasma Line-density at CC.



Heat Flux vs ECH power

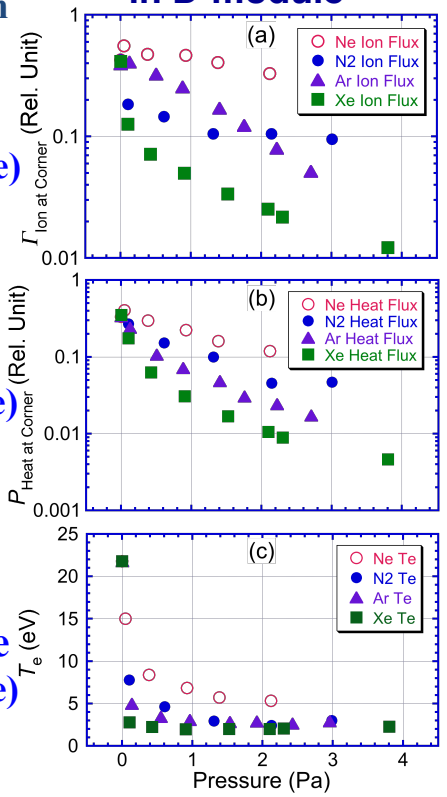


Ion Flux (Xe>N_2>Ar>Ne)

Heat Flux (Xe>Ar>N_2>Ne)

Electron Temperature (Xe>Ar~N_2>Ne)

Plasma Parameters vs Various Gas Pressure in D-module



- **Additional ICRF heating in the anchor-cells increased the plasma density, which attained the highest particle flux up to 3.3×10^{23} particles/m^2 s at the end-mirror exit with simultaneous use of ECH.**
- **Superimposing a short pulse ECH of 450 kW into ICRF plasma successfully attained the heat flux of 23 MW/m^2 at the end-cell, which exceeds the level of the ITER divertor heat load.**

Total Performance of Radiator Gases for Detachment:

Xe >> N_2 ~ Ar >> Ne