

# Development of Over MW Gyrotrons for Fusion at Frequencies from 14 GHz to Sub-terahertz

FIP1-6Rc

Presented by T. Kariya (Univ. Tsukuba)

Univ. of Tsukuba has been developing over 1 MW gyrotrons of **14GHz to sub-THz** for Fusion Devices and for Demo-Reactor in collab. with QST, NIFS, Kyushu-U., Kyoto-U., PPPL and TETD, based on 2 MW level result on the LHD 77 GHz gyrotron tube.

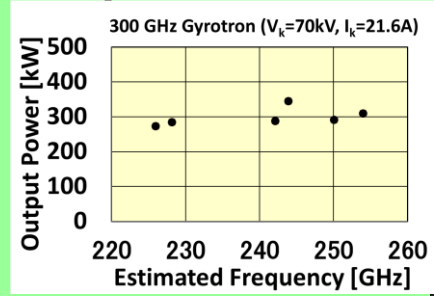
300 GHz

**Achieved over 1 MW at 28 GHz for GAMMA10, QUEST, Heliotron J & NSTX-U, and over 0.5 MW for the DEMO sub-THz tube.**



## 1. Sub-Terahertz Gyrotron for DEMO. (QST collab.)

- Over 0.5 MW at main 300 GHz TE<sub>32,18</sub> mode.
- Stable single mode osci. at each tuned freq. in 225 – 254 GHz band, which contributes greatly to the **step freq. tunable gyrotron in the sub-THz region for the DEMO-Reactor.**



## 2. 28/35 GHz, 154/116 GHz Dual-freq. Gyrotron

for GAMMA 10/PDX, QUEST, Heliotron J, NSTX-U, LHD.

28 GHz

- Oscillations of 28.04 GHz, 1.27 MW and 34.83 GHz, 0.48 MW was obtained.

- 154/116 GHz design for LHD progressed, indicating 1.5 MW output

