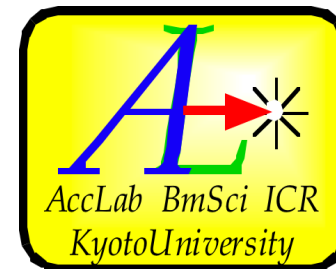

Development of Permanent Magnet Focusing System for Klystrons

Y. Fuwa, Y. Iwashita, H. Tongu,
Y. Nasu, R. Kitahara, H. Ikada;

Institute for Chemical Research, Kyoto-U

S. Fukuda, S. Michizono, T. Matsumoto;

KEK (High Energy Accelerator Research Organization)



Beam Focusing by Permanent Magnet

ILC requires a lot of klystrons.

The failure rate of each component must be minimized!!

How to reduce the failure rate...

Focusing Magnets for klystrons

The electromagnets would make maintenance problem.
power supplies - failure, power consumption
cooling systems - water leak

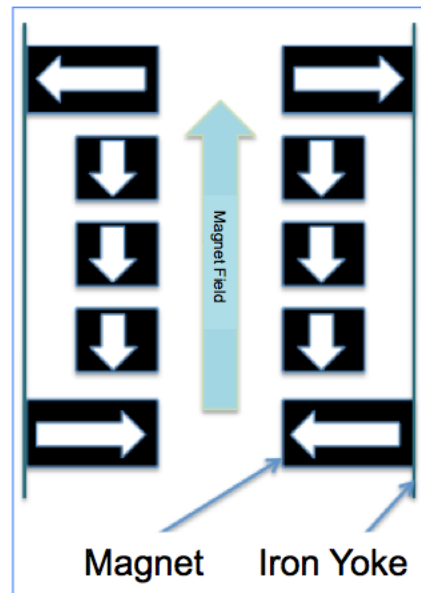
Replacing the electromagnets by permanent magnets!!

New Magnet Design Concept

Unidirectional Magnetic Field

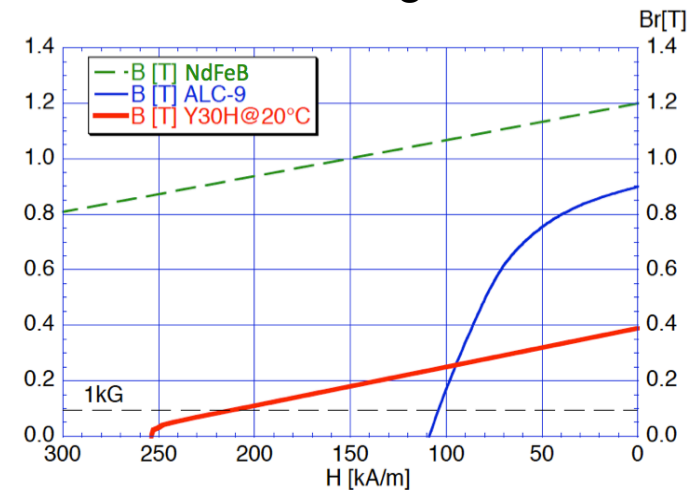
Having no stop bands.
Suitable for pulse operation.

Required magnetic field is not high.



Using Anisotropic Ferrite Magnet
Enough high Br (remanent)

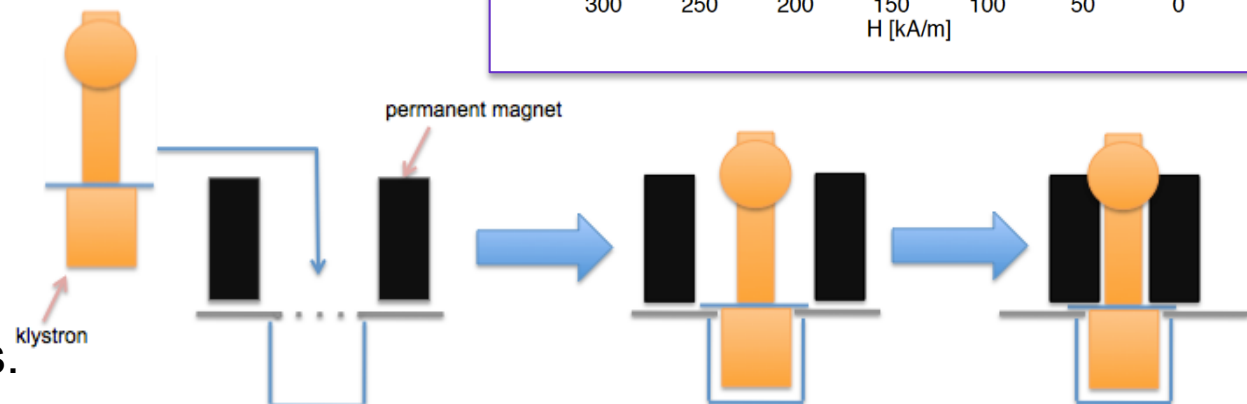
High IH_c (coercivity):
hard to demagnetize



Retractable Magnets

To adjust magnetic field distributions.

Save required volume of magnets by bringing magnets close to klystrons.



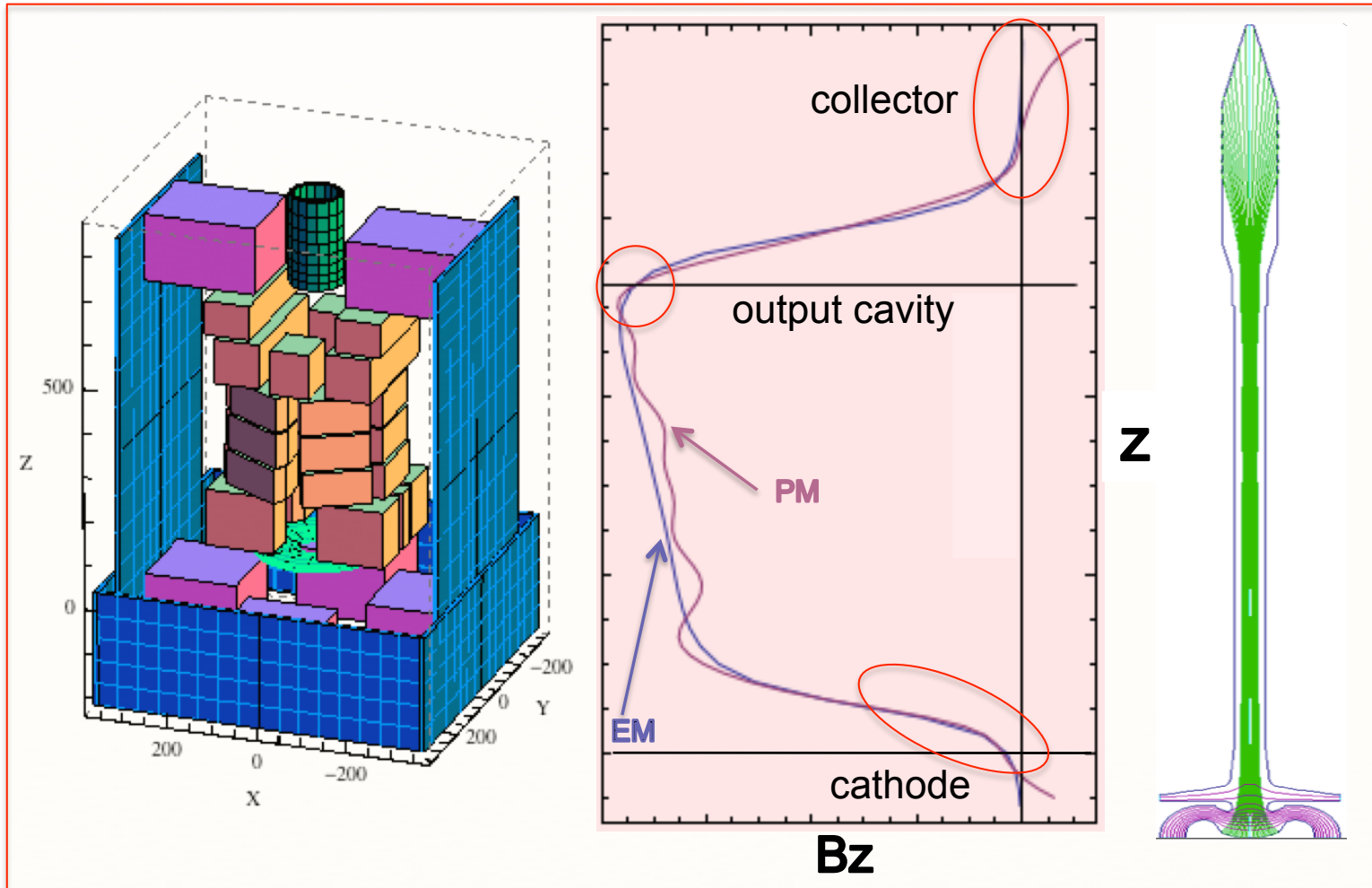
Fabrication of Test Model

Test Model for L-band MA klystron



Toshiba
E37501

1.3GHz
750kW

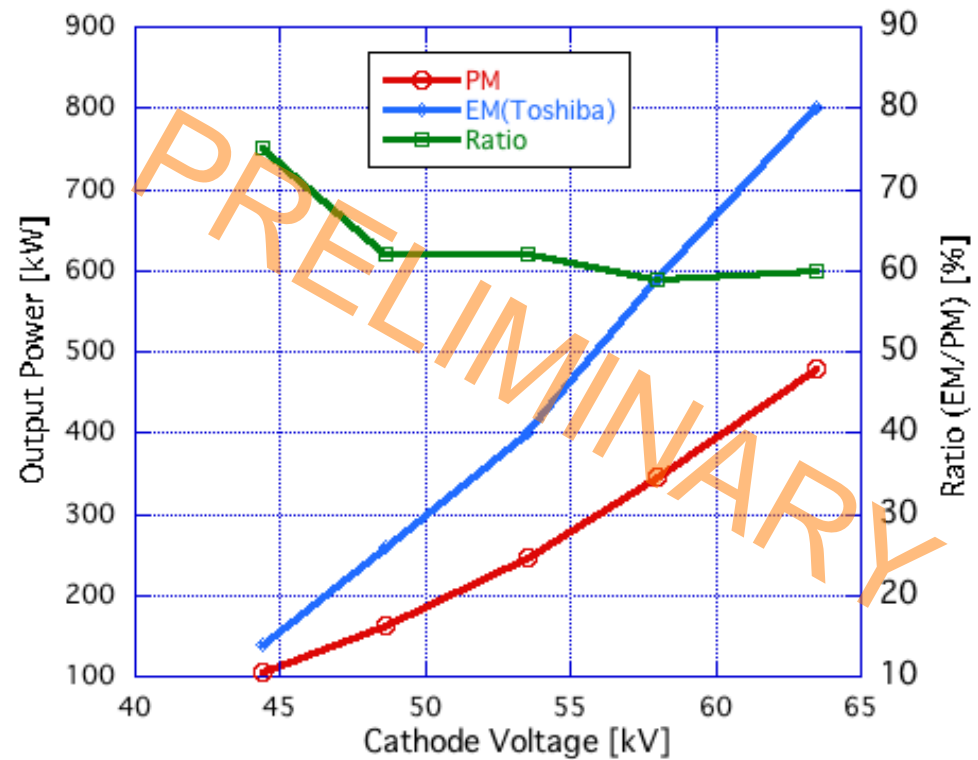


Applied Distribution of magnets and Iron Yoke

Preliminary Result of Power Test



	Test Result	Design Value
Output Power	480kW	750kW
Efficiency	33%	55%



Please come to TUPB090!!