



MT 26

International Conference on Magnet Technology

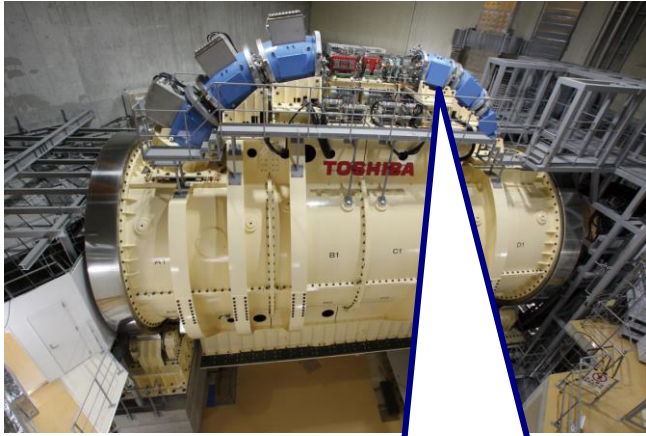
Vancouver, Canada | 2019

Wed-Mo-PL4-01

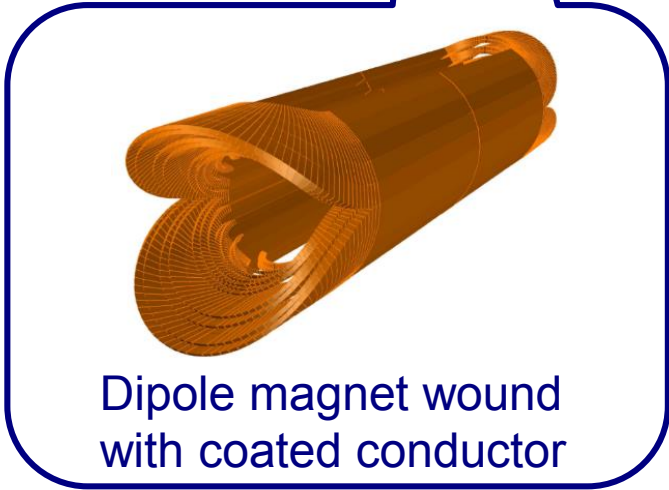
Mitigation of Shielding-current induced Field in a Magnet Wound with Coated Conductors for Accelerator Systems

Yusuke Sogabe (Kyoto University)

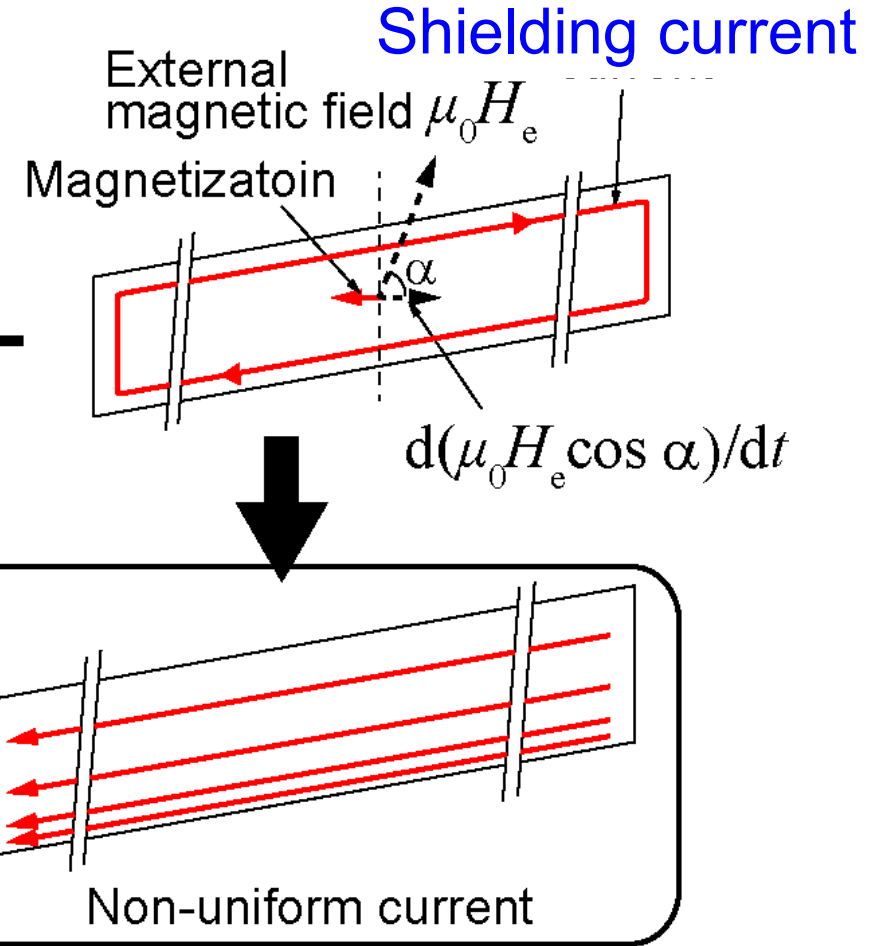
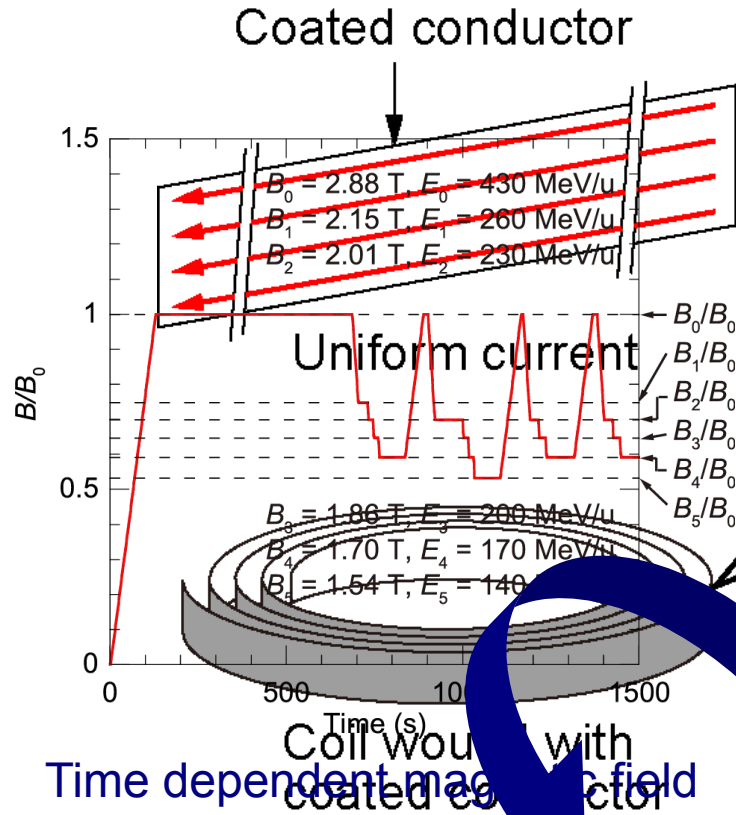
WHAT is shielding-current-induced field (SCIF)?



Rotating gantry, Heavy Medical Accelerator in Chiba



Dipole magnet wound with coated conductor

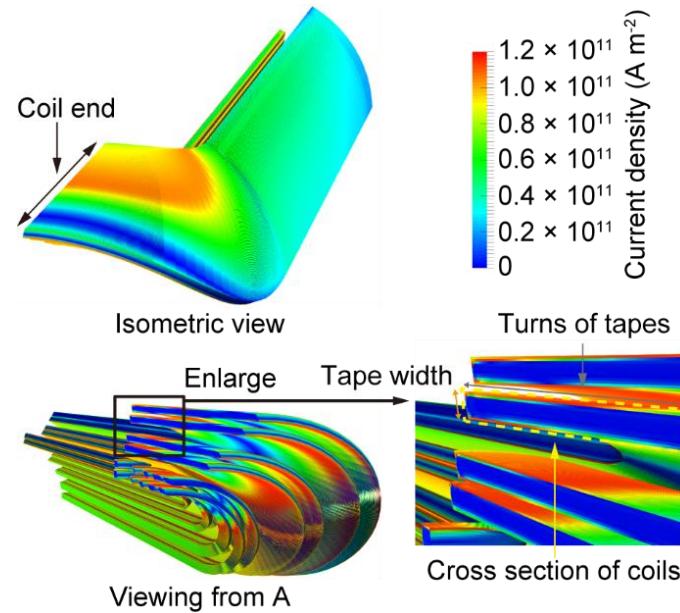
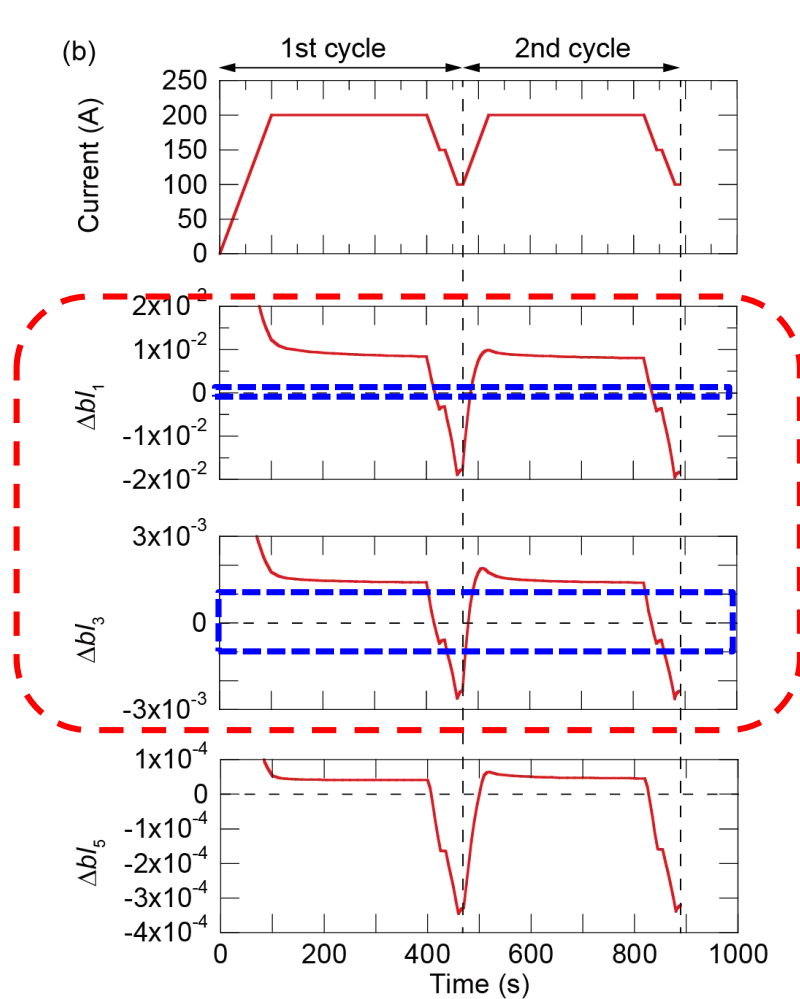


Deterioration of field quality



京都大学
 KYOTO UNIVERSITY

HOW does SCIF deteriorate field quality of accelerator magnets?



N. Tominaga, et. al., IEEE TAS, 28, 4900305

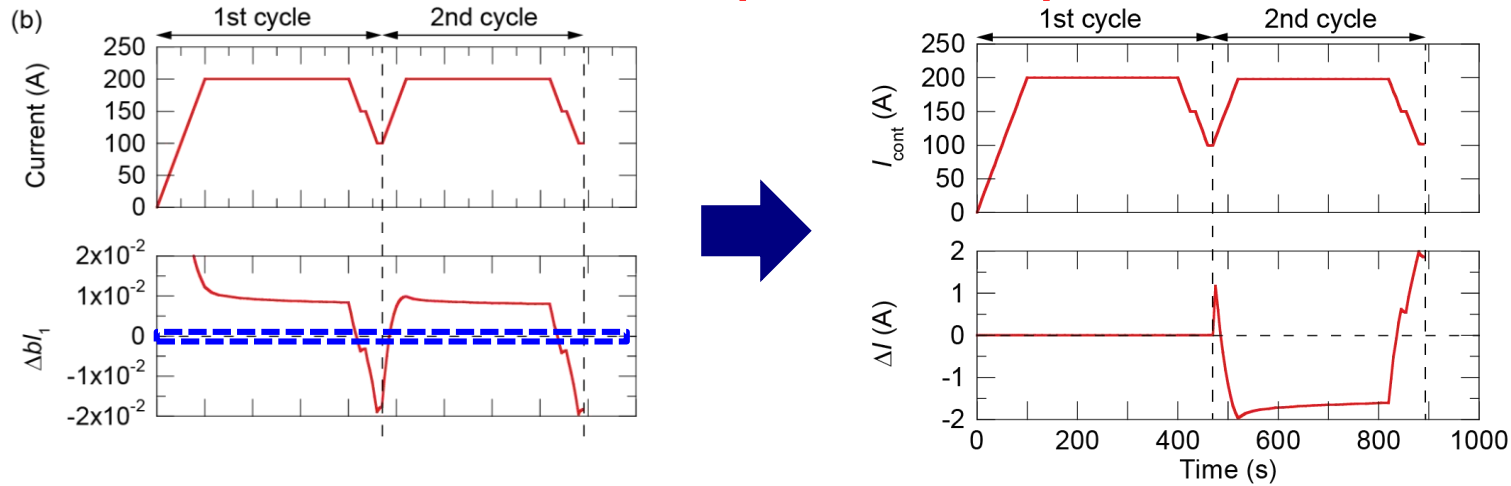
Dipole and sextupole components of SCIF have to be mitigated!!

- Dependence of SCIF on current

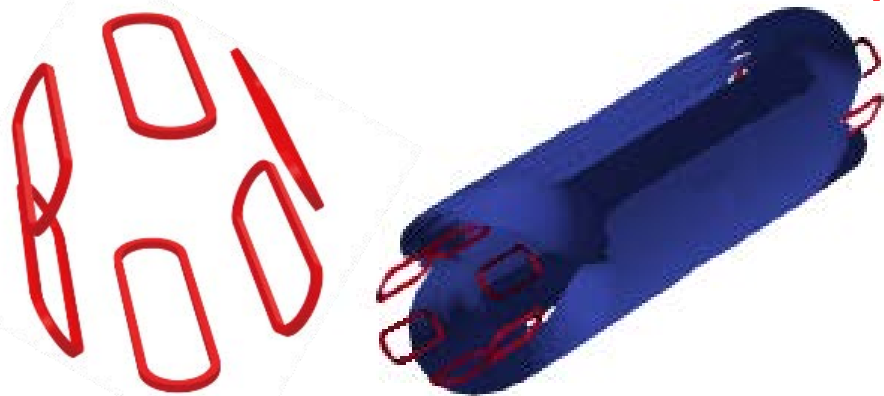
HOW can influence of SCIF be mitigated?



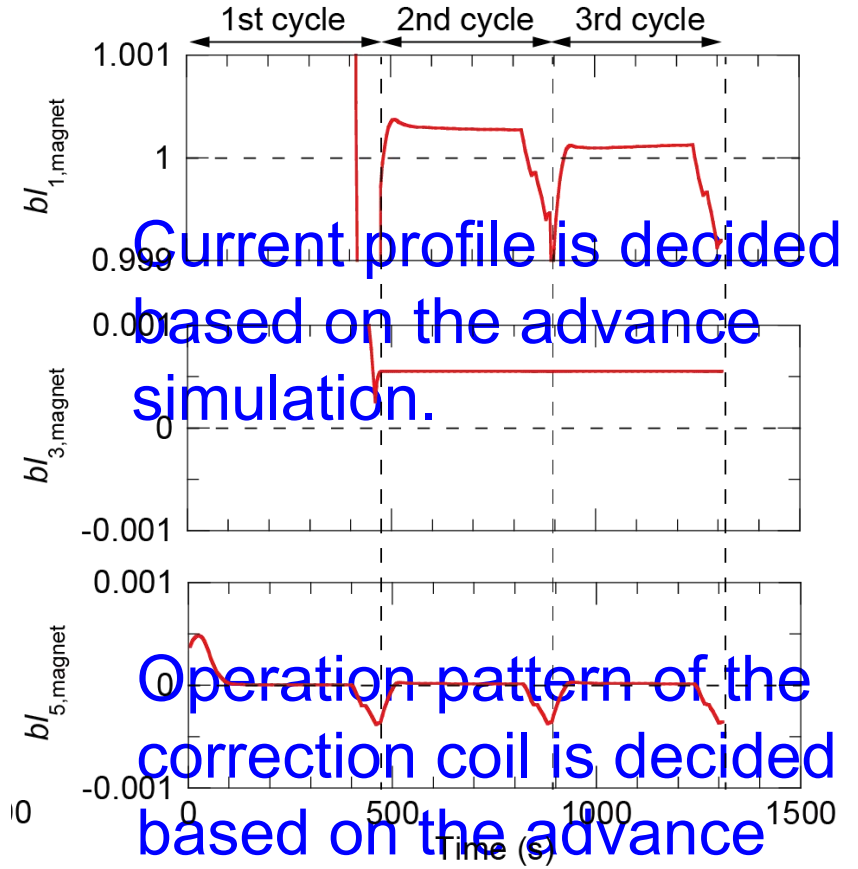
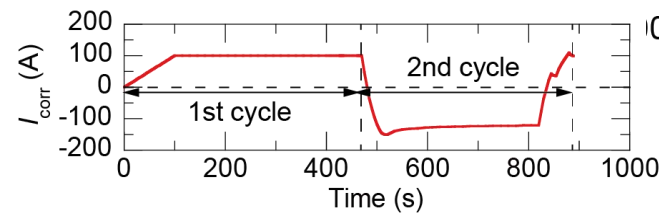
□ Current control for dipole component



□ Correction coils for sextupole component



Y. Sogabe, MT 26, 2019



Error field by SCIF was less than 1×10^{-3} of $BL_{1,d}$.

WHAT can we do for SCIF in HTS magnet?

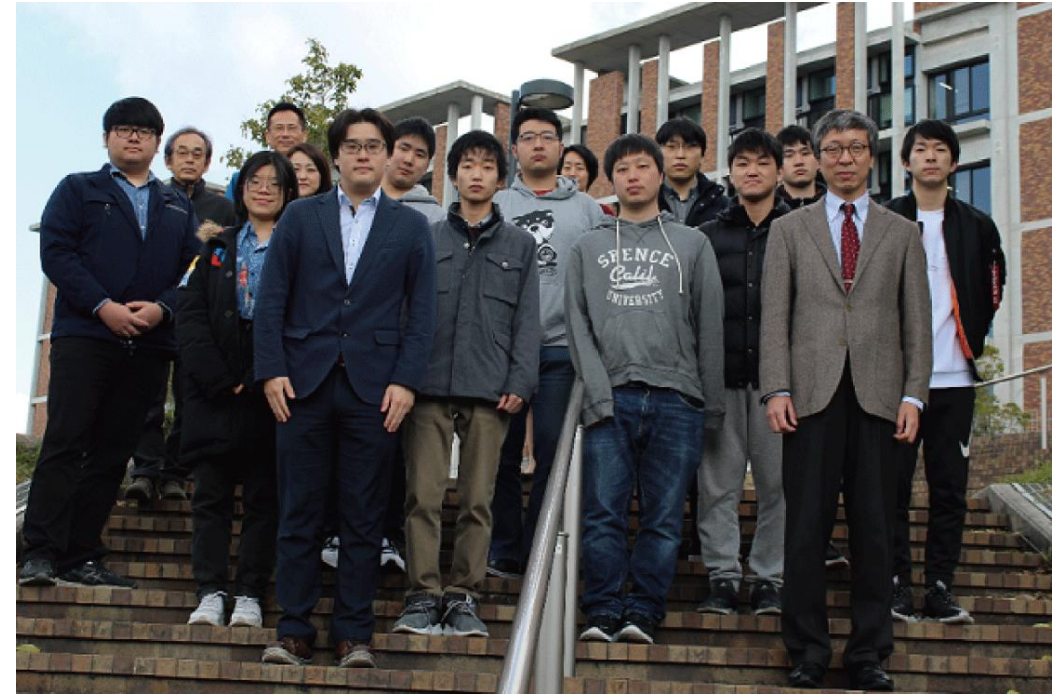
Now, we have technique to predict SCIF in the magnets and theoretical method to **examine mitigation effect of SCIF.**



SCIF will become “neighbor getting along with in HTS magnets”, not but **“the enemy standing no chance of winning”** in near future.

Acknowledgement

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