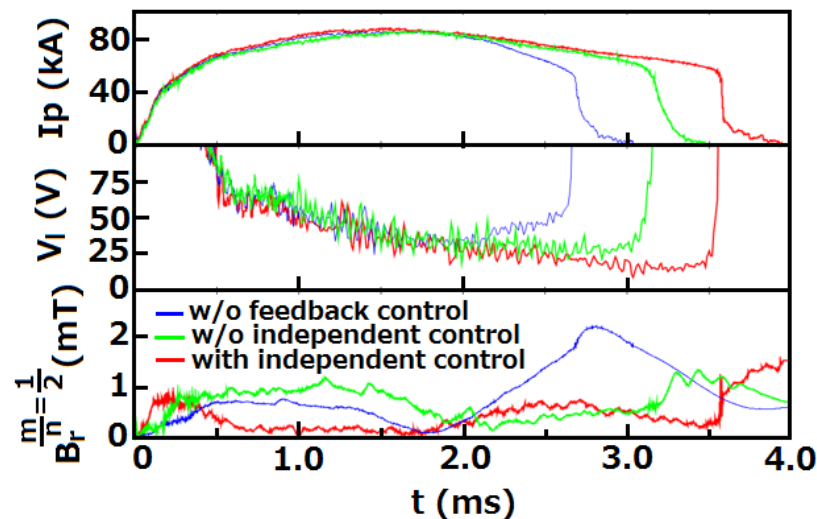
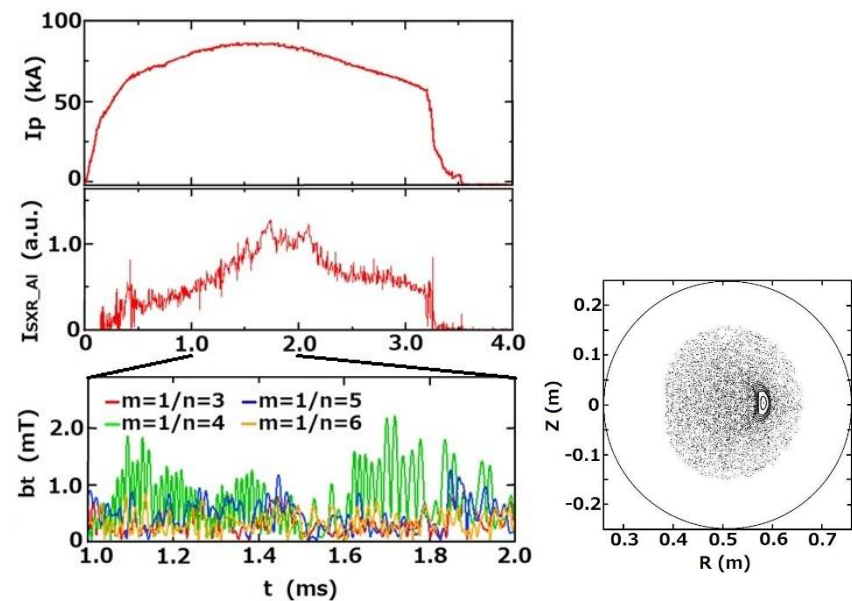


Improved Low-Aspect-Ratio RFP Performance with Active MHD Control and Associated Change in Magnetic Topology in RELAX

- Modified the active MHD control system in RELAX in order to compensate for the sideband effect
- Discharge duration reaching core-saturation-limited level with stabilization of RWM
- Central electron poloidal beta $\beta_{pe} (=2\mu_0 p_{e0}/B_{pa}^2)$ reaching ~15% from ~10% with the previous control system
- Realization of self-organization to Quasi-Single Helicity (QSH) state in deep-reversal RFP with recovery of helical closed flux surfaces



Time evolution of the plasma current, toroidal loop voltage and $m/n=1/2$ mode amplitude measured with sine and cosine coils for Br on the outer surface of the vessel. A slight increase in Br with previous feedback control (green), is suppressed in the current rise phase by modifying the control system (red), indicating successful compensation for the sideband effect.



Time evolution of the dominant and secondary mode amplitudes in deep-reversal ($F \sim -0.8$) discharge, showing spontaneous growth and decay of the dominant mode. A Poincare plot of the magnetic field lines during the QSH at 1.7 ms in the right hand side trace shows recovery of the closed magnetic surfaces.