**System identification for RWM control**

- The experimental technique excites a set of space and time harmonics and measures the vacuum and the plasma response (dither injection).
- For a marginally stable or unstable system, the identification must be performed in closed-loop operation, in parallel with feedback stabilization.
- The dither injection technique coupled to feedback control of multiple unstable RWMs has been tested in EXTRAP T2R with satisfactory results.

**Experimental study of braking torque produced by magnetic perturbations**

The EXTRAP T2R control coils are used for applying external non-axisymmetric, nearly single harmonic magnetic fields which are either resonant (RMP) or non-resonant.

- Both RMPs and non-resonant magnetic perturbations produce plasma flow braking.
- Experimental estimation of the braking torque show that:
  - RMP torque is localized at the resonance surface
  - non-resonant perturbation torque is global, qualitatively in agreement with NTV theory