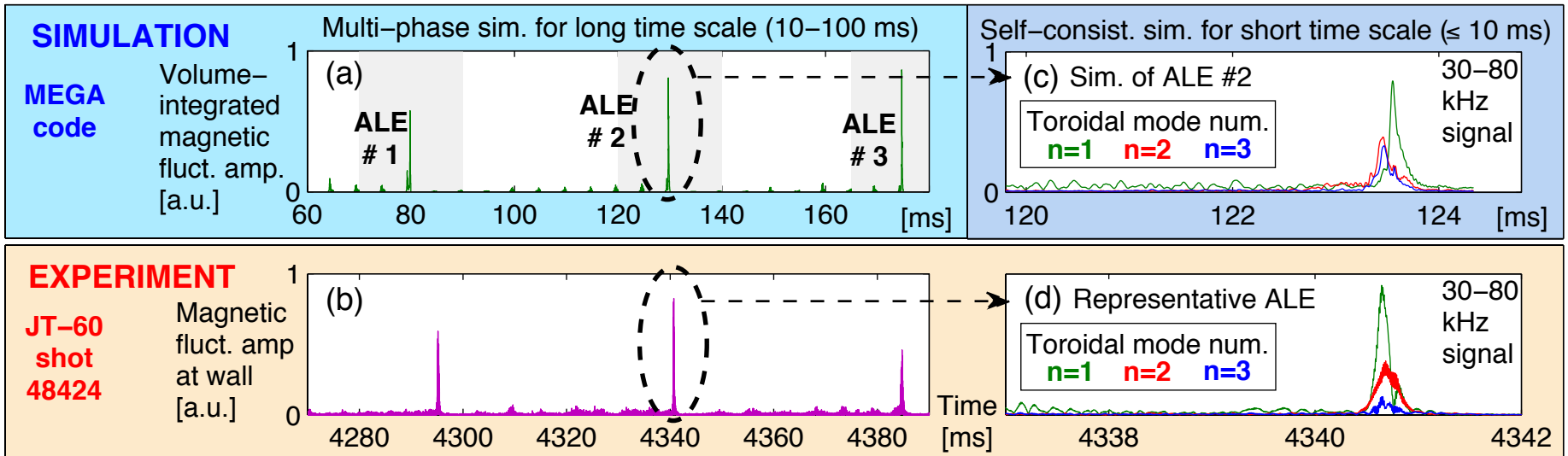
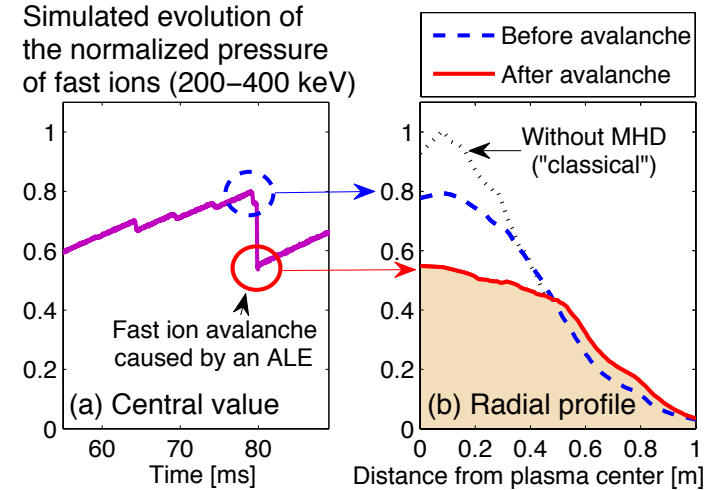


TH/4-3: First-Principle Simulations Reproduce Multiple Cycles of Abrupt Large Relaxation Events in Beam-Driven JT-60U Plasmas

A. Bierwage *et al.* (QST, Japan)

MHD-kinetic hybrid code MEGA incl. sources and collisions for beam ions has **self-consistently simulated cyclic abrupt transitions from weak to strong energetic ion transport** during “Abrupt Large Events (ALE)” as seen in JT-60U exp.

- ▶ Fast ion pressure lies 20-45% below classical prediction.
- ▶ Reproduced multiple ALEs with the correct period (~50ms).
- ▶ Found that fluctuations with multiple toroidal mode numbers $n = 1, 2, 3$ reach high amplitudes during ALEs.
- ▶ Sim. results were confirmed experimentally (validation).



→ Major new milestone for numerical prediction and physical understanding of fast ion confinement.