Comparative study between ECEI ELM observation in nonlinear ELM phase and nonlinear MHD simulations

- Nonlinear MHD ELM simulation (BOUT++, M3D-C1 and JOREK) using equivalent plasma equilibrium (KSTAR #7328, $t \sim 4.36$ s)

Each frame is normalized by each absolute maximum.

- $\Delta t \sim 1.4 \times 10^{-7}$ s and $\Delta t_{m3d} \sim 2.3 \times 10^{-7}$ s

- Although the evolution of mode structures in nonlinear phase are different in each codes, there are partial agreement with ECEI observation.
  - **BOUT++**: change of mode # spectrum near ELM-crash
  - **M3D-C1**: heat or particle transport across LCFS
  - **JOREK** (M. Bécoulet, *ibid*): mode number transition

By improving nonlinear simulation itself and comparative study with ECEI observation, it will contribute to understand nonlinear physics of ELM.