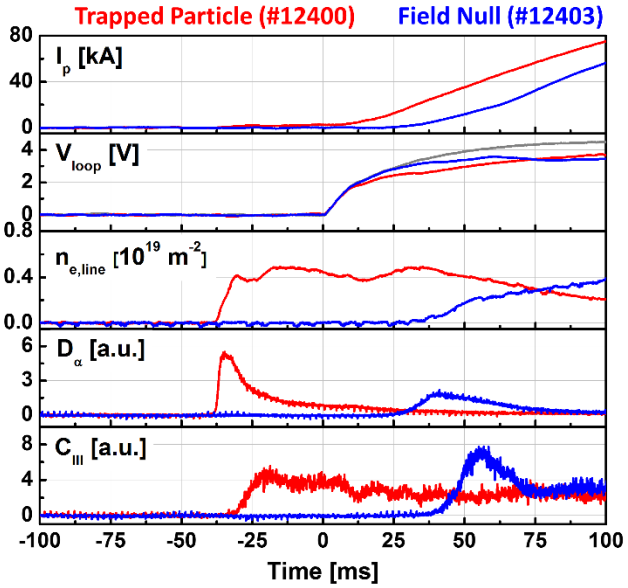
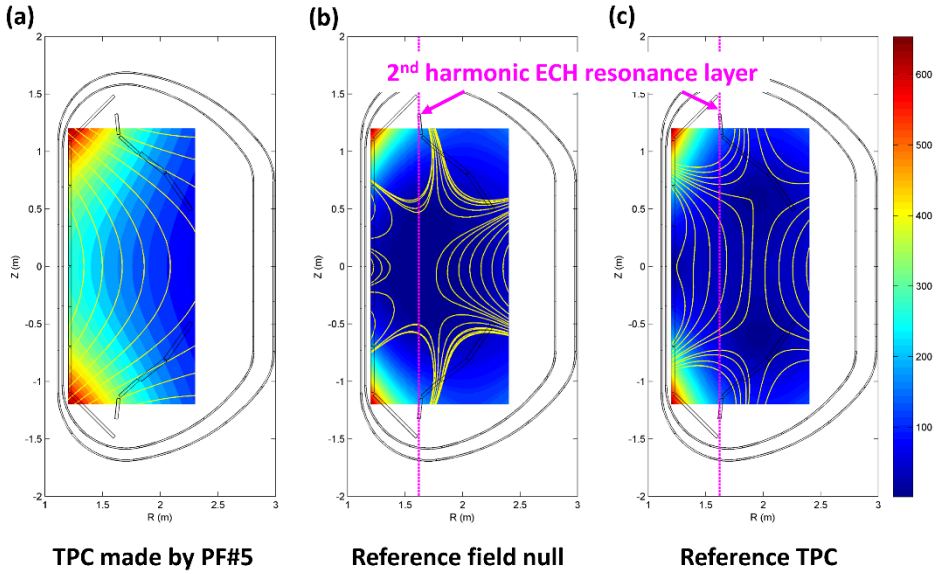
ECH-assisted plasma start-up using trapped particle configuration in KSTAR

EX/P4-14

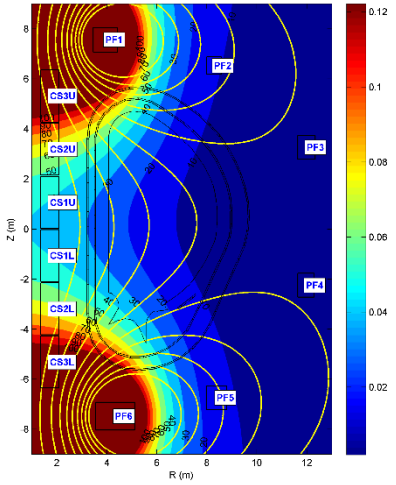
J. Lee, J. Kim, Y.H. An, M.G. Yoo, Y.S. Na and Y.S. Hwang (SNU, NFRI)





TPC made by PF#5 | Reference field null | Reference TPC

- **Efficient ECH-assisted startup using TPC than field null**
  - 600 kW / 170 GHz 2nd harmonic, toroidal field 2.7 T
  - Early, low V_{loop}, and fast I_p initiation with ~10^{18} m^{-3} pre-ionization plasmas
  - Widen operation range in terms of D_2 prefill, poloidal field strength, and "reduced E_t"
- **Implementation of the TPC start-up scheme to ITER based on KSTAR results**
  - Validation of TPC with identical ECH/ECCD condition of ITER
  - TPC field structure made by ITER geometry, by using PF#1 and #6
  - Successful start-up with ITER-level E_t, less than 0.3 V/m



Seoul National University
Fusion and Plasma Application Laboratory