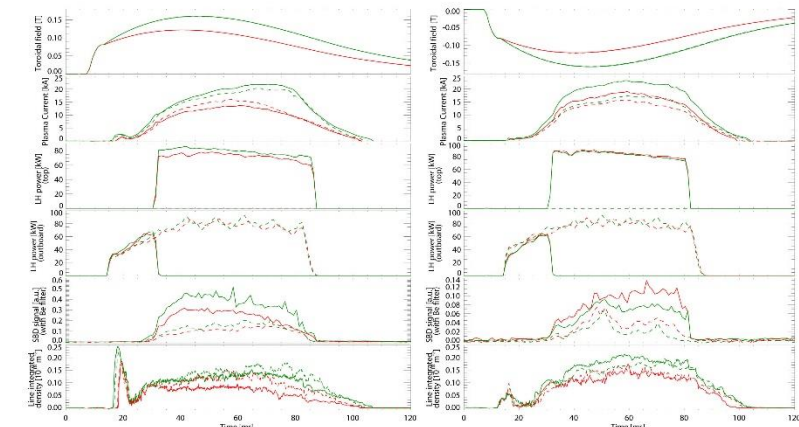
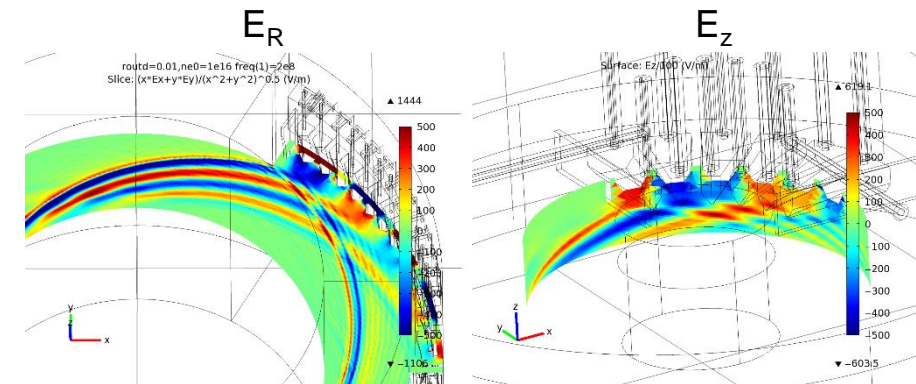
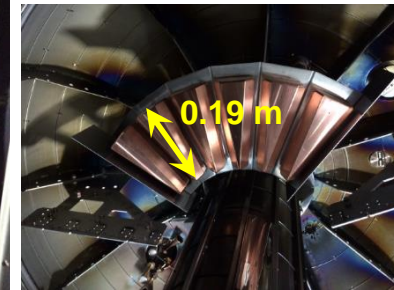
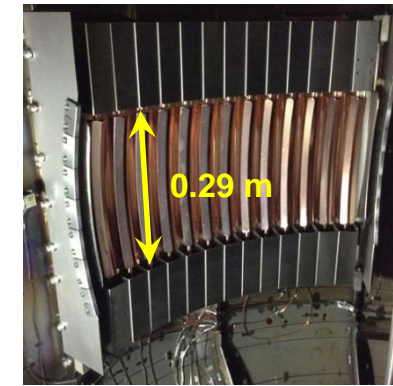


# FIP/P7-4: Y. Takase, et al.

## Development of Capacitively-Coupled Compline Antennas for Current Drive in Tokamaks

- CCC antenna can excite the LHW with high directionality efficiently with simple feeding and low reflectivity ( $\sim 1\%$ ).
- RF powers and power densities of the order of 100 kW and  $1 \text{ MW/m}^2$  can be achieved in small antennas ( $\sim 0.1 \text{ m}^2$ ) because of the low standing wave ratio.
- Successful plasma start-up and  $I_p$  ramp-up (to  $> 25 \text{ kA}$ ) have been demonstrated on TST-2.
- Antenna characteristics and wave excitation can be modelled by a finite element code.
- A circuit model based on LTspice was developed to study parameter dependences of the antenna characteristics efficiently.
- A procedure for tuning compline antennas has been developed based on such a model.



$B_t$   
 $I_p$   
 $P_{top}$   
 $P_{out}$   
 $SX$   
 $n_e I$