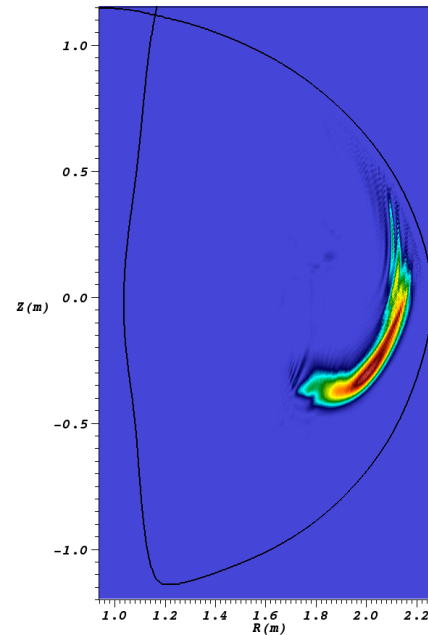
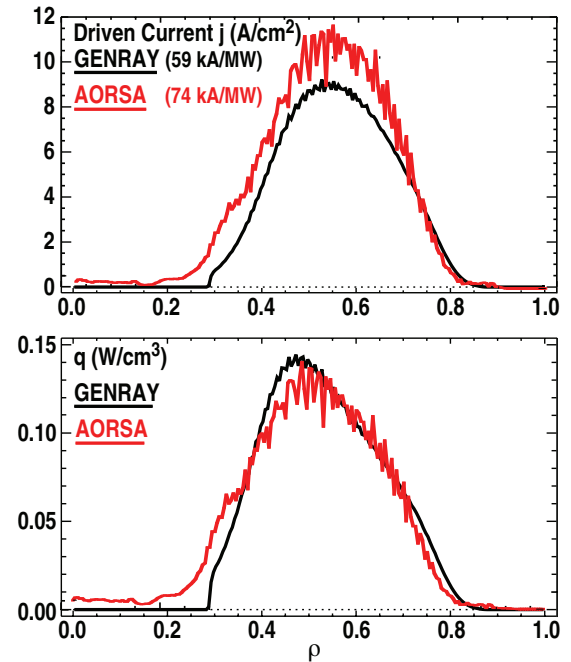


Helicons (Fast Waves at Very High Harmonics) Predicted to Drive ~ 60 kA/MW Non-inductive Current at Mid-Radius in High Performance DIII-D Discharges

- Simulations indicate that **0.5 GHz helicon waves will produce large non-inductive current at $\rho=0.6$**
 - Confirmed by both ray-tracing (GENRAY) and full-wave (AORSA) calculations
 - Factor of 2 higher current drive efficiency than other means
- **Experimental confirmation would provide new path for off-axis current drive in reactors**
- **Experiments on DIII-D using a 'comb-line' traveling wave antenna to launch helicon waves will commence next year**



AORSA full-wave calculation of helicon absorption on electrons in DIII-D



Comparison of full-wave and ray-tracing results