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[956] Automated steering angle optimization of electron cyclotron heating for fusion plasmas using TORBEAM

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One of the main actuators for nuclear fusion experiments is the electron cyclotron (EC) wave, which is used to locally heat and drive current in the plasma. High-performance operation at large fusion devices will require accurate real-time (RT) control of the EC system, including controlling the beam's deposition location in the plasma, which can be modified by adjusting the antenna's steering angles. This work uses the RT-capable beam-tracing code TORBEAM to find the EC deposition characteristics for TCV plasmas. An optimization algorithm for the steering angles is developed as a suitable tool for experiment preparation and a first step towards RT plasma profile and stability control with EC waves.

Theoretical Work

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