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**Effect of Ion Cyclotron Heating on Fast Ion Transport and Plasma Rotation in Tokamaks**<sup>1</sup> V.S. CHAN, Y.A. OMELCHENKO, S.C. CHIU, General Atomics — Minority ion cyclotron heating can produce energetic ions with banana orbits which are finite compared with the minor radius of a tokamak. The radial transport of the fast ions in the presence of Coulomb collisions results in a radial current and a corresponding JxB torque density on the bulk plasma. Collisions with the bulk ions provides an additional frictional torque that adds to or opposes the magnetic torque. This study clarifies the various mechanisms which can contribute to the torque components including collision-induced finite orbit particle diffusion, wave-induced asymmetry in canonical momentum when doppler resonance is accounted for, and orbit asymmetry created by magnetic geometry. Ion dynamics are calculated with a Monte-Carlo code in which wave-induced energy diffusion is accounted for by a quasilinear operator. The code follows particle drift trajectories in a tokamak geometry under the influence of RF fields and collisions with the background plasma. Questions on the direction of plasma rotation under different conditions and validity of the Green's function approach in modeling RF-induced rotation will be addressed.

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Prefer Oral Session  
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