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**Nonlinear effects on lower hybrid waves current drive** DEHUI LI, NONG XIANG, Institute of Plasma Physics, CAS, YU LIN, XUEYI WANG, Physics Department, Auburn University — The quasi linear theory has been widely used to calculate lower hybrid wave current drive efficiency. For a sufficiently strong wave field, however, the nonlinear effects such as mode-mode couplings and perturbed particle orbits, should be taken into account. In this work, the nonlinear interactions of lower hybrid waves and plasmas are investigated via particle-in-cell simulations based on GEFI framework. It is found that as the wave amplitude increases, the resonance broadening due to the electron trapping and mode-mode coupling is observed. As a result, the driven current is greatly enhanced.

Nong Xiang  
Institute of Plasma Physics, CAS

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