

Abstract Submitted  
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**Induced electric field by ion cyclotron wave heating**<sup>1</sup> NONG XI-ANG, Insititute of Plasma Physics, CAS, China and University of Colorado at Boulder, JOHN R. CARY, Tech-X Corp. and University of Colorado at Boulder — Ion cyclotron resonant frequency (ICRF) heating has been widely used to heat ions in fusion devices. As the ion cyclotron wave passes the (lower hybrid or hybrid) resonance, the incident electromagnetic wave converts to an electrostatic wave and the wave amplitude reaches its maximum. Meanwhile, the parametric decay may be triggered for a sufficiently large input power. Thus, the wave amplitude forms a peak near the resonance with a width of a few tens of ion gyro-radius. For typical ICRF heating parameters, it is found that the ponderomotive force induced is very significant. As a result, the ions are expelled from the region while the electrons are pulled in. Therefore an ambipolar electric field is produced. Our 1D PIC simulations show that the electric field induced could be of order of 10kV/m, comparable to the typically observed radial electric field. It is believed that the resulted electric field should be important to particle transport and plasma rotation.

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Nong Xiang  
University of Colorado

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