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Simultaneous injection of lower hybrid power at two frequencies on EAST[1] WILKIE CHOI, F.M. POLI, M. GORELENKOVA, R. ANDRE, Princeton Plasma Physics Laboratory, M.H. LI, B.J. DING, X.Z. GONG, E.Z. LI, H.Q. LIU, J.P. QIAN, Q. ZANG, L. ZHANG, ASIPP, S. SHIRAIWA, G. WALLACE, PSFC, MIT — EAST operates a number of electron heating sources, including two lower hybrid (LH) systems at 2.45 GHz and 4.6 GHz, and a 140 GHz electron cyclotron (EC) source. This offers a flexible platform to study the interactions between EC and the two different frequencies of LH, and the possible synergy where the absorption of one radiofrequency (rf) wave increases the fast electron population needed for higher efficiency current drive of another rf wave. Because the DC electric field affects the fast electron distribution function, it is important that the magnetic equilibrium and the LH current drive are evolved self-consistently. For this reason, time-dependent modeling is a necessary tool to guide experiments on EAST dedicated to access and sustainment of steady-state. The various possible combinations of the three waves have been tested in experiment, in which a slight decrease in measured loop voltage suggests stronger non-inductive current drive, and is an indicator of possible synergy between the rf waves. Simulation is in progress to reproduce the experiment and better study the synergy between of the waves.

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