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Experimental characterization of the lower hybrid wave field on the first pass using a magnetic probe array[1] T. SHINYA, The University of Tokyo, S. G. BAEK, G. M. WALLACE, R. R. PARKER, S. SHIRAIWA, MIT PSFC, Y. TAKASE, The University of Tokyo — Experimental characterization of the lower hybrid (LH) wave propagation from the launcher to the core plasma is important to validate an antenna spectrum model and to identify parasitic wave-edge plasma interactions occurring in front of the launcher. On Alcator C-Mod, the wave frequency spectrum and dominant parallel wavenumber are characterized with two probe arrays installed near the edge plasma. The first one is mounted on a radially movable structure that is about 108 deg toroidally away from the launcher. A phasing scan experiment at moderate density suggests a resonance-cone propagation of the launched slow LH wave with a finite spectral width. As plasma density is raised, the measured power decreases, correlated with the observed loss of efficiency. Recently, the second probe array with an increased number of probes has been installed on a limiter that is 54 deg. toroidally away from the launcher, which is expected to be dominantly sensitive to the wave-field directly leaving the launcher. An initial measurement shows that the probe array detects a coherent wave field. A full-wave model to evaluate the wave electric-field pattern in front of the probe array is under development. If available, further experimental and modeling results will be presented.

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