

**NEW MICROSTRIP DIRECTIONAL COUPLER DESIGN FOR SIDE OF
WAVEGUIDE IN LOWER HYBRID CURRENT DRIVE SYSTEM ON ALCATOR
C-MOD**

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We have developed a compact, mass-producible probe inserted into two holes $\lambda/2$ wavelength apart in the narrow side of the reduced height waveguides used in the Lower Hybrid Current Drive (LHCD) system. The probe consists of two magnetic loops and branch coupler mounted directly on a single microstrip circuit board, thereby greatly reducing the physical size of the probe. The transmission from magnetic loop to coupler output will be discussed in detail. The requirements for confined space and many probes positioned side by side were addressed in the package design for the probe. Calibrations have shown directivity greater than 20 dB at 4.6 GHz for each of the over 100 probes built.