

A Method of Tuning Resonant Loops*

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A convenient method of tuning resonant loops has been developed for use on the Long-Pulse Fast Wave Current Drive antennas on DIII-D. These 4-element antennas are fed from a single RF source, with a 90° hybrid junction feeding two resonant loops. Each resonant loop connects a pair of non-adjacent current straps, and a decoupler allows independent impedance matching of each output leg of the hybrid junction. The tuning method involves only measurement of the reflection coefficient of each resonant loop and the transmission from one loop to the other. It will be shown that this method of tuning equalizes the currents in all four current straps and 90° phasing between adjacent elements.

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