

**Abstract Submitted for the Forty-Ninth Annual Meeting  
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Theory      Experiment

**Experimental Comparison of Fast Wave Absorption on Fast Ions at Fourth and Sixth Harmonics,\*** R.I. Pinsker, C.C. Petty, *GA*, W.W. Heidbrink, *UC-Irvine*, F.W. Baity, *ORNL*, M. Porkolab, *MIT* – In recent DIII-D experiments, we have compared the absorption of fast waves (FWs) on injected deuterium beams at the fourth and sixth deuterium cyclotron harmonics. Direct electron absorption also plays an important part in the core absorption. Up to 2 MW of FW power at 90 MHz is compared with a similar level of 60 MHz power in low-density L-mode discharges at 2 T with 1–2 MW of deuterium beam injection at 80 keV. Changes in the neutron rate and in the central sawtooth behavior are correlated with the observed acceleration of the beam ions by the rf as measured by the  $D_{\alpha}$  charge exchange recombination diagnostic. Results obtained with hydrogen beams in which second and third harmonic absorption at 60 MHz and 90 MHz are compared will be presented. Lower global absorption efficiency observed for higher cyclotron harmonics in this multiple-pass absorption regime is attributed to the effect of an edge loss that competes with the core absorption mechanisms.

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