

Abstract Submitted
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**High Harmonic Ion Cyclotron Heating in DIII-D:
III. Excitation of Alfvén Instabilities**¹ S. BERNABEI, E.D.
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Irvine, E.A. LAZARUS, Oak Ridge National Laboratory — Sawtooth
stabilization with ICRF heating is due to the buildup of a strong fast
ion population inside $r(q = 1)$. In DIII-D the fast ions are generated by
acceleration of beam injected ions: the 3rd, 4th, and 5th harmonics of
deuterium are present in the plasma at a typical B_T in DIII-D. Stabi-
lization of the sawteeth for up to 0.25 s is always accompanied by Alfvén
instabilities. Since the first pass damping is rather weak, all harmonics
contribute to the global power absorption. With the 4th harmonic of
deuterium near the magnetic axis, small changes in B_T cause either the
3rd or the 5th harmonic to approach the center and contribute to the
damping, creating fast ions outside $r(q = 1)$. We attempt to reconstruct
the fast ion pressure profile to identify the power deposition and to iden-
tify the MHD modes responsible for the giant crash: evidence from other
experiments indicates that they are Energetic Particle Modes.

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Prefer Oral Session
 Prefer Poster Session

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Special instructions: DIII-D Poster Session 2, immediately following WW Heidbrink

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