Abstract Submitted
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**Effect of hydrogen minority on the power balance for fast wave heating in DIII-D**[1] R. PRATER, R.I. PINSKER, M. CHOI, General Atomics, R.W. HARVEY, YU. PETROV, CompX, M. PORKOLAB, MIT — Experiments on L-mode discharges in DIII-D using high harmonic fast waves to heat the beam ions have shown moderately high heating efficiency at the 4th harmonic of deuterium (60 MHz) but much poorer efficiency at the 8th harmonic (116 MHz) [1]. Linear theory [1] suggests that the difference in absorption should be much smaller, but calculations with ORBIT-RF show little heating at 116 MHz [2]. An alternative suggestion for where the fast wave power goes in the 116 MHz case is to a small hydrogen minority which might develop a strong energetic tail [3] without affecting the neutron rate. The Fokker-Planck code CQL3D has recently been augmented by CompX to support the calculation of the distribution functions of two ion species simultaneously. This model will be applied to explore the effects of a range of hydrogen concentrations for comparison to the experiment.

[1] R.I. Pinsker, et al., Nucl. Fusion **46**, S416 (2006).
[2] M. Choi, et al., Nucl. Fusion **46**, S409 (2006).
[3] E.F. Jaeger, private communication.

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