

Abstract Submitted  
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**Anomalous Absorption of X2-Driver Pump Power in DIII-D Tokamak Plasma Via Relativistic Electron Bernstein Modes and Lower Hybrid Waves**

V. STEFAN, Tesla Laboratories, The Stefan University, 1010 Pearl Street, P. O. Box 2946, La Jolla, CA 92038 — Recently<sup>1</sup> I have reported on anomalous absorption of relativistic electron Bernstein modes (R-E-B) for various driver-plasma parameters in Spherical Tokamaks and DIII-D Tokamak plasma. Here I focus on X2-Driver Pump decay in DIII-D Tokamak plasma involving lower-hybrid waves (LHW). This channel involves the Brillouin scattering of X2-Mode into another (X2)'-mode coupled to the lower-hybrid waves (LHW). The nonlinearly generated (X2)'-Mode propagates toward the second harmonic electron cyclotron layer, whereby it is absorbed through R-E-B-Mode conversion, as in case of linear propagation-absorption channel. This leads to a strongly localized absorption. The weak LHWs are collisionally absorbed in the dense plasma region transferring the energy to ion plasma component—bulk plasma heating. The secondary decays of X2, X1, and EB modes, are taken into account in evaluation of energy confinement time in multi-ion plasmas

<sup>1</sup>V. Stefan. Anomalous Absorption of R-E-B Modes Due to Raman and Brillouin Scattering, and Two EB-Mode Decay of X2-Driver in DIII-D Tokamak Plasma. 16<sup>th</sup> Topical Conf. on RF Power in Plasmas [Park City, 2005] V. Stefan. Enhanced Thermonuclear Yield Due to Low-Harmonic REB Modes in Spherical Tokamak Plasmas. Sherwood-2005 [Stateline, Nevada, USA]

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