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Anomalous Absorption of High-Harmonic Relativistic Electron Bernstein Modes in Spherical Tokamak Plasmas[1] V. STEFAN, Tesla Laboratories, The Stefan University, 1010 Pearl Street, P. O. Box 2946, La Jolla, CA 92038 — It is shown that an efficient control of anomalous absorption in Spherical Tokamaks (ST) is possible, leading to a favorable convective EB harmonics excitation. In this model an external electron cyclotron waves, O- or X-mode, excite relativistic Electron Bernstein Mode[12] harmonics (EB harmonics) in the edge region of ST plasma. Nonlinear relativistic EB harmonics, in turn, propagate toward the central region of ST, whereby they are effectively absorbed in the electron cyclotron resonance region. The scaling laws for the thermonuclear yield, ratio of the thermonuclear power to the external power, for the case of excitation of EB harmonics, n(EB)+ (n-1) (EB), n= 5,6 harmonic number, and for the excitation of n(EB) + (UH), (UH)the upper hybrid mode, are obtained. The plasma-ignition criterion is analyzed in terms of O- and X-Mode power.

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[21] V. Stefan, Anomalous Absorption of X2-Driver Pump Power in DIII-D Tokamak Plasma Via Relativistic Electron Bernstein Modes and Lower Hybrid Waves (Abstract: K1.00028; The American Physical Society, April-2006 Meeting, April 22-25, 2006; Dallas, TX.)

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