Abstract Submitted
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Thermonuclear Yield in DIII-D Tokamak Plasma due to the High Harmonics Relativistic Electron Bernstein Modes[1] V. STEFAN, Nikola TESLA Laboratories, Stefan University, 1010 Pearl Street, P. O. Box 2946, La Jolla, CA 92038-2946 — The scaling laws for the thermonuclear yield, ratio of the thermonuclear power to the external power, for the case of excitation of Electron Bernstein Mode (EB) high harmonics, n(EB), n= 3... 6 harmonic number, and lower hybrid waves are obtained for the DIII-D Tokamak plasma environment.[2] The plasma-ignition criterion is analyzed in terms of the X-Mode power. An efficient control of anomalous absorption in DIII-D Tokamak plasma is proposed. In this novel model, the external electron cyclotron driver, X-mode, excites relativistic EB mode high harmonics.[3] Nonlinear relativistic EB harmonics, in turn, are effectively absorbed via nonlinear collisional damping in the electron cyclotron high-harmonic resonance regions.

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[2]**R. Prater**, Phys. Fluids **11**(5), 2349 (2004).
[3]**V. Stefan,** Anomalous Absorption of High-Harmonic Relativistic EB Modes in Spherical Tokamak Plasmas, 2007. American Physical Society**,** April 14–17, 2007, Jacksonville, Florida; **V. Stefan,** Thermonuclear Yield Due to the Relativistic EB Modes in Spherical Tokamak Plasmas, Sherwood Conference, March 30-April 2, 2008, Boulder, Colorado.

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