

Abstract Submitted
for the APR07 Meeting of
The American Physical Society

Sorting Category: L4. (T)

**Anomalous Absorption of High-Harmonic Relativistic
Electron Bernstein Modes in Spherical Tokamak Plasmas¹** 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 possi-
ble, leading to a favorable convective EB harmonics excitation. In this
model an external electron cyclotron waves, O- or X-mode, excite rel-
ativistic Electron Bernstein Mode¹² 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, $n(\text{EB}) + (n-1)$
(EB), $n= 5,6$ harmonic number, and for the excitation of $n(\text{EB}) +$
(UH), (UH)the upper hybrid mode, are obtained. The plasma-ignition
criterion is analyzed in terms of O- and X-Mode power.

¹Supported by Tesla Laboratories

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.)

V. Stefan

vs@stefan-university.edu

Prefer Oral Session
 Prefer Poster Session

Tesla Laboratories, The Stefan University, 1010 Pearl Street
P. O. Box 2946, La Jolla, CA 92038

Date submitted: 09 Jan 2007

Electronic form version 1.4