

Abstract Submitted
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Nonlinear electron resonance heating vs. the Herlofson paradox¹

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BROCK, RALF PETER BRINKMANN, Ruhr University Bochum — In the regime
of low gas pressure, capacitive rf discharges exhibit resonant behavior which can
have a profound impact on the energy budget. This contribution compares two
scenarios of resonance-related electron heating known as, respectively, “nonlinear
electron resonance heating” (NERH) and “the Herlofson paradox”. NERH arises
from the self-excitation of the plasma series resonance by harmonics generated via
the nonlinearity of the plasma sheath. ¹ The Herlofson paradox, on the other hand,
is a linear phenomenon that occurs at points where the electron plasma frequency is
locally equal to the rf frequency. ^{2,3,4} This contribution intended to point out simi-
larities and differences of the two scenarios. ¹ T. Mussenbrock and R.P. Brinkmann,
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