Abstract Submitted
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The General Theory of Ionization Instabilities in a Plasma Slab, Supported by Microwave SERGEY DVININ, Lomonosov Moscow State university, Moscow, Russia, OLEG SINKEVICH, Moscow Power Engineering Institute, Moscow, VITALY DOVZHENKO, Obukhov Institute of Atmospheric Physics RAS, Moscow — The development of ionization instability in an infinite plasma slab, maintained by a microwave with frequency ω_0, is investigated. The resonance (connected with surface wave excitation) [1] and kinetic (strata) [2] modes are considered. The angle between propagation vector and normal to slab boundary is assumed to be arbitrary. When the oblique incidence takes place, the wavelengths of the anti-Stokes and Stokes perturbations became different. Instability in an infinite system is determined by the position of branch points on the complex plane. The evolution of perturbations from a local source for an infinite plasma column (in the absence of reflection from the ends of a real plasma column) and in the presence of boundaries is calculated. Areas of parameters, when development of convective and absolute instabilities will take place, are determined. Phenomenological models of the nonlinear stage of instabilities development are proposed. The possibility of observing of this type of instability in low-pressure plasma reactors is discussed. For a spatially limited system, the results of the calculations show good agreement with experiment. [1] S. Dvinin et al. Sov. Phys.: Fizika Plazmy, 9, 1983, 1297. [2] B. S. Kerner, V.V. Osipov. Autosolinons. Springer-science+Business Media B.V. 1994, 671 p. [3] D. L. Bobroff, H. A. Haus. J. Apple. phys., 1967, **38**, 1, p. 390.

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