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Microwave Plasma Confinement and Alfvén Wave Ion Heating

JUN-CHIEH WANG, JANG-YU HSU, Department of Physics and Plasma and Space Physics Center, NCKU, Tainan, Taiwan — An incident electromagnetic wave with its reflection from an opposite mirror forming a standing wave can easily be absorbed by electrons [1,2] through linear mode conversion into the Langmuir wave [3]. The collisionless electrons at more than 10KeV responding to the ac electric field could excite an ac current that pinches the plasma and results in a plasma equilibrium. Moreover, the oscillatory electric field may excite an Alfvén wave. Since half of the Alfvén wave energy is in the ion flow energy, the ion kinetic energy can thus be increased with randomization in the flow velocity. The theory is being developed to compare with the experimental details.

- [1] K. V. Alexandrov, L. P. Grachev, I. I. Esakov, V. V. Fedorov, K. V. Khodataev, Zhurnal Tekhnicheskoi Fiziki, Vol. 76, No. 11, 2006.
- [2] L. P. Grachev, I. I. Esakov, K. V. Khodataev, Technical Physics Vol. 48, No. 5, p.557, May 2003.
- [3] Thomas H. Stix, Phys. Rev. Lett., 15, 878, 1965

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