

Abstract Submitted
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Heavy ion heating due to interaction with outward and inward Alfvén wave packets V.I. SHEVCHENKO, V.I. GALINSKY, UCSD — Study of the heavy ion simultaneous cyclotron interactions with outward and inward propagating Alfvén wave packets in the solar wind was conducted. It was shown that because the lines of pitch-angle diffusion of the ions due to interaction with each separate type of waves intersect, the ions scatter not only over pitch angle but also in energy - second-order Fermi acceleration (e.g. Ref. 1). The dynamics of the ion distribution function was investigated. It was shown that even in case of large ratio of intensities of Alfvén waves propagating from the sun and inward propagating waves, the distribution function of ions simultaneously interacting with both wave packets drastically differs from the one in case when ions interact only with waves propagating from the sun. In the latter case the ions acquire a shell-like distribution while in the former case a new non-shell-type distribution with much larger effective temperatures is formed.

[1] M.A. Forman, and G.M. Webb, Acceleration of energetic particles, in *Collisionless Shocks in the Heliosphere, A Tutorial Review*, edited by R. Stone and B. Tsurutani, *Geophys. Monograph*, 34, 91, 1985.

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