

# High energy tail formation due to right-hand polarized ion cyclotron waves

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Recent observations on board the Ulysses spacecraft show the presence of high velocity "tails" in the proton distribution functions as well as in heavier ion velocity distributions such as alpha particles and oxygen ions. These tails are exponential in shape and extend up to 10 thermal velocities, or beyond. It is generally believed that shock drift acceleration is responsible for tail formation. However, it is shown here that right-hand polarized electromagnetic waves driven by thermal anisotropies, can also accelerate high velocity protons and heavier ions giving rise to tail formation. The particle velocity at which tail formation begins, depends on the value of the thermal anisotropy of the proton distribution function. © 1995.