Ion acoustic damping effects on parametric decays of Alfvén waves: Right-hand polarization

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We study ion acoustic damping effects on parametric decays of right-hand-polarized electromagnetic waves. We do this because ion beams have been observed in a variety of space environments, and consequently, these waves can exist in those places. Damping effects are incorporated into the model by adding to the longitudinal component of the equation of motion a collision-like term. Like for left-hand-polarized waves, the effect of damping is twofold. On the one hand, damping decreases the maximum growth rate of the existing instabilities while increasing the instability range, and on the other hand, it destabilizes regions that are stable in the absence of damping. Thus, for low-frequency pump waves, ?0 ? ?ci, and for low ? = vt/vA (?ci is the ion gyrofrequency, and vt and vA are the thermal and the Alfvén velocities, respectively), where the only parametric instability is a decay instability, damping destabilizes the frequency range between ? = 0 and the threshold of the decay instabil