アーク偏波アルヴェン波の多重パラメトリック崩壊不安定性について

On multiple parametric decay instability of arc-polarized Alfven waves

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Finite amplitude Alfven wave is an exact solution of the ideal magnetohydrodynamic (MHD) system. It is important that the angle between the ambient magnetic field and the wave number vector can be finite even in exact Alfven waves. The arc-polarized Alfven wave is one of such Alfven waves and unstable to the parametric decay instability [e.g., Del Zanna (2001); Del Zanna et al (2015)]. In this presentation, we revisit the parametric decay instability of arc-polarized Alfven waves. Since more than one frequency component is included in arc polarized waves, parametric decay instabilities satisfying different resonance conditions simultaneously occur. Occurrence of such multiple parametric decay instability is demonstrated by using the three-dimensional MHD simulation. Dependence of the decay instability on anisotropy of the wave number spectra is discussed.

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