Abstract Submitted
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Three-wave interactions in magnetized warm-fluid plasmas[1] YUAN SHI, Lawrence Livermore Natl Lab — Three-wave coupling coefficients in magnetized warm-fluid plasmas is computed by solving the fluid-Maxwell's equations to second order using multiscale perturbative expansions. A convenient general formula is obtained, whereby numerical values of the coupling coefficient can be determined for any three resonantly interacting waves propagating at arbitrary angles. To illustrate how the general formula can be applied, coupling coefficient governing laser scattering is evaluated as one example. In conditions relevant to magnetized inertial confinement fusion, Raman and Brillouin instabilities are replaced by scattering from magnetized plasma waves when lasers propagate at oblique angles. As another example, coupling coefficient between two Alfven waves via a sound wave is evaluated. In conditions relevant to solar corona, the decay of a parallel Alfven wave only slightly prefers exact backward geometry.

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Yuan Shi
Lawrence Livermore Natl Lab

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