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Elastic Turbulence in strongly coupled dusty plasma medium[1]
AMITA DAS, SANAT KUMAR TIWARI, VIKRAM SINGH DHARODI, BHAVESH G. PATEL, PREDHIMAN KAW, Institute for Plasma Research — The dusty plasma medium can be often found in a strongly coupled state when the Coupling parameter defined by the ratio of the inter-particle coulomb energy to the thermal kinetic energy of the particle exceeds unity. At the intermediate values of the parameter, the dusty plasma medium behaves like a visco -elastic fluid. The visco - elastic nature has been captured by a Generalized Hydrodynamic model for the dust momentum equation. This is coupled with the Poisson equation, in which the Boltzmann response of electron and ion species has been retained. The study of the evolution of random fluctuation for this particular set of model equation has been carried out in two dimensions. The spectral evolution shows that in this case short scale fluctuation persists, unlike the inverse spectral cascade behavior associated with typical Navier stokes dynamics. Other interesting aspects such as recurrence of sharp scale structures have also been observed and will be reported.

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