

with Auburn dusty plasma and magnetized dusty plasma posters

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Molecular dynamic simulation of weakly magnetized complex plasmas DYLAN FUNK, UWE KONOPKA, EDWARD THOMAS, Dept. Phys. Auburn University — A complex plasma consists of the usual plasma components (electrons, ions and neutrals), as well as a heavier component made of solid, micrometer-sized particles. The particles are in general highly charged as a result of the interaction with the other plasma components. The static and dynamic properties of a complex plasma such as its crystal structure or wave properties are influenced by many forces acting on the individual particles such as the dust particle interaction (a screened Coulomb interaction), neutral (Epstein) drag, the particle inertia and various plasma drag or thermophoretic forces. To study the behavior of complex plasmas we setup an experiment accompanying molecular dynamic simulation. We will present the approach taken in our simulation and give an overview of experimental situations that we want to cover with our simulation such as the particle charge under microgravity condition as performed on the PK-4 space experiment, or to study the detailed influences of high magnetic fields. This work was supported by the US Dept. of Energy (DE-SC0016330), NSF (PHY-1613087) and JPL/NASA (JPL-RSA 1571699).

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