

Abstract Submitted
for the DPP19 Meeting of
The American Physical Society

Anisotropic diffusion of 2D superparamagnetic dusty plasma liquids.¹ FANG YANG, Civil Aviation University of China, China, SONGFEN LIU, Nankai University, China, WEI KONG, Civil Aviation University of China, China; Auburn University, USA — The diffusion of two-dimensional (2D) superparamagnetic dust grains interacting via both Yukawa and dipole interactions is investigated based on the Langevin dynamics simulation. The magnetic dipole moment, induced by the external magnetic field, is tilted with respect to the 2D layer. It is demonstrated that there exist anisotropic diffusions in the liquid-like state, and the anisotropic diffusions are determined to be the normal type. The anisotropy degree depends on the system temperature and tilt angle of the magnetic dipole, particularly for the latter. Relevance between anisotropic diffusion and pairwise interaction potential energy are examined. The anisotropic oscillations of the system are presented as well.

¹Supported by National Natural Science Foundation of China under Grant No. 11805272 and National Key RD Program of China (Grand No. 2017YFE0301700).

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Date submitted: 03 Jul 2019

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