

# Hydrodynamics of droplet lattices in quasi 2D free-standing liquid crystal films

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In an experiment on ISS, we prepared nearly regular triangular droplet lattices on free-standing liquid crystal films to investigate the diffusion and vibration dynamics on these lattices [1]. The layered structure in smectic A phases allows the preparation of thin and homogeneous macroscopic films. We record the motion of the droplets and calculate their diffusion characteristics. The experiments are compared to numerical simulations of droplet arrangements assuming specific repulsive interaction potentials. The mean-square displacement of the droplets reveals mobilities in the lattice and information on the strength of the potential.

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## References

- [1] N. A. Clark, A. Eremin, M. A. Glaser, N. Hall, K. Harth, C. Klopp, J. E. Maclennan, C. S. Park, R. Stannarius, P. Tin, W. N. Thurmes, and T. Trittel, Realization of hydrodynamic experiments on quasi- 2D liquid crystal films in microgravity, ASR Volume 60, 737-751, 2017

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