

Studying the onset of turbulence in flowing complex plasmas

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Turbulence remains one of the oldest unsolved problems in physics. Studying how a flow can transition from laminar to turbulent can deepen our understanding of how and when turbulence emerges. Complex plasmas are ionised gasses with micrometre sized “dust” particles immersed in them, and they are valuable in studying turbulence as the highly charged microparticles are big enough to be imaged directly when their flow becomes turbulent. We investigate the onset of turbulence by studying complex plasmas flowing past a disturbance. We perform molecular dynamics (MD) simulations of the experiment performed using the Plasmakristall-4 (PK-4) laboratory on board the International Space Station at low pressures to study the emergence and decay of turbulence