Lagrangian mappings' caustics in gel oxyhydrate magnetic ferrofluid

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Abstract

Stochastic caustics flows in gel systems, e.g., in magnetic ferrofluid(II; III) are not optical systems. The models that consider inelastic collisions presuppose formation of shockwaves where those collisions occur. The phenomenon in question is essentially gel wave interference or diffraction that generates manifolds of moving wave fronts, which has been found experimentally. Rearrangements of those fronts are fundamentally rearrangements of oxyhydrate caustics, studied in space and time. Becoming conjoined at various time points, the fronts form a hypersurface in space and time. Formed by a typical moving front, the hypersurface is, in turn, a front of a typical Legendrian manifold. The manifold in question is the material basis underlying the formation of primary structured clusters in the gel.