Abstract Submitted
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Numerical approach on dynamic self-assembly of colloidal particles MUHAMET IBRAHIMI, SERIM ILDAY, GHAITH MAKEY, IHOR PAVLOV, ZGN YAVUZ, OGUZ GULSEREN, FATIH OMER ILDAY, Bilkent Univ — Far from equilibrium systems of artificial ensembles are crucial for understanding many intelligent features in self-organized natural systems. However, the lack of established theory underlies a need for numerical implementations. Inspired by a novel work[1], we simulate a solution-suspended colloidal system that dynamically self assembles due to convective forces generated in the solvent when heated by a laser. In order to incorporate with random fluctuations of particles and continuously changing flow, we exploit a random-walk based Brownian motion model and a fluid dynamics solver prepared for games, respectively. Simulation results manage to fit to experiments and show many quantitative features of a non equilibrium dynamic self assembly, including phase space compression and an ensemble-energy input feedback loop.

1. Ilday, Serim, et al. *APS March Meeting Abstracts*. 2016.

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