Abstract Submitted
for the DFD20 Meeting of
The American Physical Society

Dynamics of droplets in dense emulsions[1] IVAN GIROTTO[2], International Centre for Theoretical Physics, Italy, ROBERTO BENZI, University of Rome Tor Vergata, Italy, KARUN DATADIEN, GIANLUCA DI STASO, Eindhoven University of Technology, The Netherlands, PRASAD PERLEKAR, Tata institute of fundamental research, Hyderabad, India, JEAN-PAUL VAN WOENSEL, FEDERICO TOSCHI, Eindhoven University of Technology, The Netherlands — Emulsions are fascinating systems displaying an extremely rich and fundamental fluid dynamic phenomenology. From dilute to highly concentrated, emulsions can exhibit a variety of small-scale morphology and statistical properties. In particular, stabilized emulsions with high volume fraction for the dispersed phase (i.e. above 65%), can display much of the rich phenomenology and rheological properties typical of soft-glasses. First, by means of state-of-the-art 3d numerical simulations, based on the multi-component Lattice Boltzmann method, we study the dynamics of the emulsification processes induced by a large-scale chaotic stirring. Second, we present and discuss a number of observables that allows us to statistically characterize the dynamics of the emulsion at the microscopic scale, these quantities include: the probability distribution function of the velocity and acceleration of single droplets, the relative and absolute dispersion of droplets. Outlook on connecting the microscopic dynamics with large-scale rheology will be discussed

[1]We would like to thank PRACE for the granted project (ID: 2018184340 & 2019204899) "TurEmu - The physics of (turbulent) emulsions" along with CINECA and BSC for access to their HPC systems.
[2]I have three affiliations which I would like to be reported (if possible) in order of priority: 1) International Centre for Theoretical Physics, Italy 2) Eindhoven University of Technology, The Netherlands 3) University of Modena and Reggio-Emilia, Italy

Ivan Girotto
International Centre for Theoretical Physics, Italy

Date submitted: 03 Aug 2020 Electronic form version 1.4