Phenomenology of chaotic flows of dense stabilised emulsions
FEDERICO TOSCHI, Eindhoven University of Technology, The Netherlands,
ROBERTO BENZI, University of Rome "Tor Vergata", Italy, CHAO SUN, Ts-
inghua University, China, THOMAS VAN VUREN, Eindhoven University of Tech-
nology, The Netherlands — Stabilized emulsions display a rich phenomenology and
are ubiquitous in food and cosmetic products. Multicomponent fluids emulsions can
be made via hydrodynamic stirring of two immiscible fluids; this typically produces
droplets of the minority phase dispersed into the majority phase. According to the
intensity of the stirring, one can observe a chaotic or a fully developed turbulent
flow where the size of the dispersed droplets can be characterized by the classical
Kolmogorov-Hinze argument. When the emulsion is stabilized, e.g. by the pres-
ence of surfactants, the phenomenological picture can drastically change. Here we
employ state-of-the-art numerical simulations to study the influence of disjoining
pressure, at differentvolume fractions and stirring intensities,in order to generalise
the fundamentalKolmogorov-Hinzephenomenology to stabilised emulsions.

Federico Toschi
Eindhoven University of Technology