

Liquid bridge fragmentation

Internship position | MSc 2 or equivalent

Host organisation: SIMaP UMR 5266

Supervisor: Romain VALLON (MCF)

Context

From the formation of spray, sneezing or agricultural irrigation, the fragmentation of liquids is at the heart of many natural and industrial processes. Knowing the size of the resulting droplets is essential for understanding and controlling those processes, for example, to anticipate the spread of airborne diseases or to optimise water use.

Project

The focus is on studying the fragmentation of liquid bridges, a key element for liquid fragmentation, by performing direct numerical simulations (DNS) using the open-source software Basilisk (www.basilisk.fr). The DNS will be computed on the regional high-performance computer Gricad (gricad.univ-grenoble-alpes.fr). The study objective is to determine the velocity profiles in the bridge and the droplet size distribution generated by its fragmentation over a range of viscosity ratios, and then compare the results with the literature.

Requirements

2nd-year MSc or final-year engineering student. A strong knowledge of Fluid Mechanics and solid programming skills (Python-like) are expected. Knowledge of C++ is a plus. Technical English is required. The candidate must have a degree of autonomy.

Starting date, duration and allowance

The internship will start in February 2025 and last up to 26 weeks. Internship allowance will be provided.

Application

Please send a detailed CV (3 pages max.), a motivation letter (2 pages max.) and the transcripts of the last two academic years to romain.vallon@grenoble-inp.fr