



Poster: Break or Relax

Ignacio Roa, Camille Deberne, Marie-Charlotte Renoult, Christophe Dumouchel, Jorge César Brändle de Motta

► To cite this version:

Ignacio Roa, Camille Deberne, Marie-Charlotte Renoult, Christophe Dumouchel, Jorge César Brändle de Motta. Poster: Break or Relax. 76th Annual Meeting of the APS Division of Fluid Dynamics, Nov 2023, Washington, United States. American Physical Society, 10.1103/APS.DFD.2023.GFM.P0039 . hal-04299365

HAL Id: hal-04299365

<https://hal.science/hal-04299365>

Submitted on 22 Nov 2023

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Break or Relax

I. Roa, C. Deberne, M.C. Renoult, C. Dumouchel, J.C. Brändle de Motta
Normandie Univ, INSA ROUEN, UNIROUEN, CNRS, CORIA, 76000 Rouen, France

Droplet breakup under turbulent conditions is not such a straight-forward process. A series of droplets initialized on a spherical state surrounded by a turbulent flow were realized and left to evolve until breakup was reached.

Although the statistical properties of the turbulence are equivalent for all the droplets, their deformation history is unique. This uniqueness arises from the delicate equilibrium between turbulent-induced and cohesive forces. A strong deformation event can emerge during the droplet lifetime (first column). This state can lead to either a rapid breakup due to capillary instabilities (first row) or relaxation due to surface tension (last row).

In essence, droplet breakup in turbulence is a dynamic and individualized process.

Droplet database generated
 using ARCHER code

