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Unstable bidimensional grids of liquid filaments: Drop pattern after breakups[1] JAVIER DIEZ, INGRITH CUELLAR, PABLO RAVAZZOLI, ALEJANDRO GONZALEZ, Instituto de Fisica Arroyo Seco (CIFICEN-CONICET), Universidad Nacional del Centro de la Provincia de Buenos Aires (UNCPBA) — A rectangular grid formed by liquid filaments on a partially wetting substrate evolves in a series of breakups leading to arrays of drops with different shapes distributed in a rather regular bidimensional pattern. Our study is focused on the configuration produced when two long parallel filaments of silicone oil, which are placed upon a glass substrate previously coated with a fluorinated solution, are crossed perpendicularly by another pair of long parallel filaments. A remarkable feature of this kind of grids is that there are two qualitatively different types of drops. While one set is formed at the crossing points, the rest are consequence of the breakup of shorter filaments formed between the crossings. Here, we analyze the main geometric features of all types of drops, such as shape of the footprint and contact angle distribution along the drop periphery. The formation of a series of short filaments with similar geometric and physical properties allows us to have simultaneously quasi identical experiments to study the subsequent breakups. We develop a simple hydrodynamic model to predict the number of drops that results from a filament of given initial length and width.This model is able to yield the length intervals corresponding to a small number of drops.

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