PHYSICAL MATHEMATICS SEMINAR

Parallelization of Microfluidic Droplet Makers

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ABSTRACT :

Emulsions are ubiquitous in our daily life with a broad spectrum of applications, e.g. enhanced oil recovery, food, cosmetics etc. Typically emulsions are obtained by shearing two immiscible fluids with a surfactant. However this traditional approach lacks the fine control of droplet size and polydispersity that is crucial for many applications like drug delivery or carbon free copy paper. In contrast, almost monodisperse droplets of a given size can be formed with microfluidics. Nevertheless, scalability is challenging with typical flow rates in the order of a few hundred ul/h. Parallelization of droplet makers is a promising route to overcome this challenge but exhibits limitations as the droplet size is determined by the flow rates. Thus clogging of one channel affects the flow rates in all other channels hence changing the droplet size. Here, a microfluidic drop maker design is discussed that is independent of the flow rates and allows to massively parallelize drop makers for robust operation at high flow rates.

TUESDAY, OCTOBER 7, 2014
2:30 PM
Building E17, Room 122

Reception following in Building E17, Room 401A
(Math Dept. Common Room)

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