

Abstract Submitted  
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**Stable nematic droplets with handles** JAYALAKSHMI VAL-LAMKONDU, EKAPOP PAIRAM, Georgia Institute of Technology, VINZENZ KONING, Instituut-Lorentz Universiteit Leiden, BATES MARTIN, York University, VINCENZO VITELLI, Instituut-Lorentz Universiteit Leiden, ALBERTO FERNANDEZ-NIEVES, Georgia Institute of Technology — We use a simple method to generate nematic liquid crystal droplets with handles. The method relies on the viscous forces exerted by a flowing continuous phase above its yield stress over a liquid crystal which is extruded from an injection needle; the resultant jet is forced to close into a torus, due to the imposed rotation, and is stable against surface tension instabilities, due to the elasticity of the outer phase. We find that the ground state of these nematic liquid crystal toroidal droplets is defect free and exhibits twist, irrespective of the aspect ratio of the torus. By including the saddle-splay contribution to the elastic free energy density, we find that this state indeed corresponds to the lowest energy state. For droplets with additional handles, we find there are two surface defects or boojums per additional handle.

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