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Abstract for an Invited Paper
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Toroidal Nematics

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We will discuss how nematic liquid crystals organize inside toroidal droplets. When the director is parallel to the bounding surface, we find spontaneous reflection symmetry breaking, which we attribute to the role played by saddle-splay contributions to the Frank free energy. When the director is perpendicular to the bounding surface, we find that the structure is reminiscent of the escape radial configuration seen in cylinders, but with a central doubly-twisted organization, which we attribute to the geometry of the torus. We will end by presenting recent experiments with active nematics on the toroidal surface. In this case, topology and activity both affect the structure and dynamics of the material.