

Abstract Submitted
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Microstructured optical fibres: how do physical parameters influence the final geometry?¹ YVONNE STOKES, The University of Adelaide, PETER BUCHAK, DARREN CROWDY, Imperial College London — Drawing of a microstructured optical fibre can be described by a 1D differential equation for the cross-sectional area as a function of axial position and a 2D classical Stokes-flow model for the evolution of the cross-sectional geometry as it moves along the fibre axis. These two models are coupled through the total length of the cross-sectional boundary. Physical parameters, including the initial preform geometry, the draw ratio and material properties, enter the model in non-trivial ways and affect the final fibre geometry. In this talk we will examine the coupled 1D and 2D models of fibre drawing to gain understanding of the influence of physical parameters on the final geometry, and also look at the existence and uniqueness of solutions. We aim to determine what fibre geometries can or cannot be obtained from a given initial preform.

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