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John Ball is Sedleian Professor of Natural Philosophy in the Mathematical Institute at Oxford University and Director of the Oxford Centre for Nonlinear PDE. After obtaining his doctorate in 1972 at the University of Sussex under the supervision of David Edmunds, he joined the Department of Mathematics at Heriot-Watt University, Edinburgh, where he remained until moving to Oxford in 1996. His main research interests are in the calculus of variations and infinite-dimensional dynamical systems, together with their applications to solid mechanics, materials science and liquid crystals. He was President of the International Mathematical Union from 2002-06.

Title: Mathematical models of liquid crystals

Abstract: Recent years have seen an explosion of interest in the mathematics of liquid crystals. The lecture will survey some mathematical results and open questions related to the Oseen-Frank and Landau – de Gennes models, in particular concerning how these models describe defects.