Well-posedness, regularity and asymptotic analysis for a fractional phase field system

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This talk is on the well-posedness and regularity of solutions of a reaction-diffusion system of coupled bulk-surface equations on a moving domain modelling receptor-ligand dynamics in cells. The coupling of the unknowns is through a nonlinear Robin boundary condition for the bulk quantity and the source terms for the two surface quantities. After motivating the model, I will discuss the difficulties posed by this system and the technical tools necessary in order to achieve the desired analytical results. This talk is based on a recent joint paper with Charlie Elliott (University of Warwick, UK) and Joana Terra (Universidad Nacional de Cordoba, Argentina).