THOMAS HILLEN, University of Alberta
Non-local Models for Cellular Adhesion

Cellular adhesion is one of the most important interaction force between cells and other tissue components. In 2006, Armstrong, Painter and Sherratt introduced a non-local PDE model for cellular adhesion, which was able to describe known experimental results on cell sorting and cancer growth. While the numerical implementation leads to nice results, the analysis of this non-local model is challenging. In this talk I will present a random walk derivation of the Armstrong-Painter-Sherratt adhesion model, I will discuss local and global existence of solutions, the underlying bifurcation structure of steady states, and a biologically accurate definition of non-local boundary conditions. (joint work with A. Buttenschoen, K. Painter, A. Gerisch, M. Winkler).