TEMPLE UNIVERSITY
Department of Mathematics

Applied Mathematics and Scientific Computing Seminar

Wednesday, 14 September 2016, 4:00 p.m.
Room 617 Wachman Hall

(refreshments and social at 3:45 p.m)

Mathematical models of cell movements

by Alex Mogilner

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Abstract. Animal cells crawl on surfaces using lamellipodium dynamic network of actin polymers and myosin motors enveloped by the cell membrane. Cell motility is very complex due to multi-scale, multi-dimensional and free-boundary nature of the phenomenon. Mathematical and computational models based on PDEs and numerical methods have been very instrumental in understanding how cells move. I will demonstrate how simulations of a 2D model of viscous contractile actin-myosin network with free boundary explains straight steady gliding of cells, turning and self-polarization behavior.