PIETRO-LUCIANO BUONO, University of Ontario Institute of Technology
Bifurcations and dynamics of a O(2) symmetric hyperbolic PDE model for animal aggregation

I will be presenting recent results concerning a 1D hyperbolic PDE model for animal aggregations developed by R. Eftimie (Dundee, UK). This PDE model with periodic boundary conditions is O(2) symmetric where the group O(2) is generated by translations and a reflection. The focus of the talk will be on discussing the emergence of spatio-temporal patterns near steady-state/Hopf and Hopf/Hopf codimension two bifurcation points at a homogeneous equilibrium with full symmetry. I will also be showing how some more exotic patterns can be associated with invariant sets in phase space. Finally, I will briefly explain theoretical results on the applicability of Lyapunov-Schmidt reduction and the Centre Manifold Theorem. This is joint work with R. Eftimie (Dundee, UK).