

Departmental Colloquium

Dr. Etienne Farcot
University of Nottingham, UK

Tuesday, January 10, 2017
1:00p.m., HH-3017

*Mathematical models of auxin driven patterning
in plants-new results and some questions*

Abstract:

The plant hormone auxin is one of the main drivers of organ formation in plants, both at the shoot and root. The seemingly very regular organisation of plants seen at macroscopic scales (called phyllotaxis) is initiated at microscopic scales by auxin patterning. Underground, the constant reiteration of lateral root formation is known to involve some periodic signal related to auxin, though the molecular details remain to be determined. In this talk, one will discuss a recent stochastic model of phyllotaxis able to reproduce some irregularities which are commonly found in phyllotaxis, and shows that these irregularities actually carry quantitative information about the phyllotactic process. One will also discuss how different models of both auxin transport and auxin signalling present some stable periodic solutions. One will focus on the potential dynamics that could result in situations where both signalling and transport are periodic, by coupling existing models of these two processes.