

School of Mathematics and Applied Statistics
2013 Colloquium Series

Title: On the Willmore Functional

Speaker: Yann Bernard (University of Freiburg)

Time and Date: 3:30pm Friday 18 October 2013

Location: 6-210

Abstract: Mathematically modelling elasticity and “bending” phenomena has applications in many areas of science. For example, red blood cells may be thought of as droplets of liquid enclosed in very thin membranes. Given an area and a volume enclosed, can one predict which shape a red blood cell will assume? This question may be phrased in terms of a minimization problem, where the bending energy is modelled by the integral of the square of the mean curvature (“Willmore energy”). In this talk, we will recall the elementary and fundamental properties of the Willmore energy and review some important related results (the Willmore “conjecture”). We will also answer the question: what do red blood cells look like?