# Geometric Random Graphs

**Nikolaos Fountoulakis (Univ. Birmingham)**

Title: Evolving simplicial complexes

Abstract: We will consider a class of dynamic modes for random simplicial complexes, which generalise the preferential attachment model. Starting with a simplex of dimension r, vertices arrive one by one and they are equipped with a weight or fitness which is drawn independently each time from a given distribution. Each face of the simplicial complex thus has weight which is a function of the weights of its vertices. A new vertex selects an r-1-face with probability proportional to its weight and forms an r-simplex, whereas the r-1-face is removed from the complex.
This model is inspired by a model introduced by Bianconi and Rahmede (Nature Scientific Reports, 2015) When the weights are all equal, the above coincides with the class of models known as Apollonian networks.

We shall discuss the probabilistic analysis of this model, focusing on the distribution of its degrees. This is join work with T. Iyer, H. Sulzbach (Birmingham) and C. Mailler (Bath).