1125-60-2261 **Carl P Dettmann*** (carl.dettmann@bris.ac.uk), **Orestis Georgiou** and **Georgie Knight**.
Spectral statistics of random geometric graphs.

We study the spectrum of random geometric graphs using random matrix theory. We look at short range correlations in the level spacings via the nearest neighbour and next nearest neighbour spacing distribution and long range correlations via the spectral rigidity Δ_3 statistic. These correlations in the level spacings give information about localisation of eigenvectors, level of community structure and the level of randomness within the networks. We find that the spectral statistics of random geometric graphs fits the universality of random matrix theory. In particular, the short range correlations are very close to those found in the Gaussian orthogonal ensemble of random matrix theory. For long range correlations we find deviations from Gaussian orthogonal ensemble statistics towards Poisson. We compare with previous results for Erdos-Renyi, Barabasi-Albert and Watts-Strogatz random graphs where similar random matrix theory universality has been found. (Received September 20, 2016)