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Carl P Dettmann* (carl.dettmann@bris.ac.uk). *Random geometric graphs on nonuniform and fractal measures*. Preliminary report.

A random geometric graph (RGG) is a set of points defined by a Poisson point process (PPP) together with links between points whose mutual distance is less than a threshold (or more generally, occur with a distance dependent probability). In RGG with a finite expected number of points, there are two main transitions, percolation, the appearance of a large connected component, and connectivity, when all points are connected in a multi-hop fashion. In many cases it is known that connectivity occurs simultaneously with the connection of the last isolated point, and that isolated points are asymptotically Poisson distributed. One assumption underlying these results is that the density of points does not vanish within or towards the boundary of the support of the PPP. Here, we consider PPP defined using a variety of nonuniform and fractal measures that break this assumption, and explore the consequences for the above properties. These ideas are relevant to mobile ad-hoc networks, in which the points are mobile devices, links are pairwise connections, and the distribution is often in practice far from uniform. (Received September 20, 2016)