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*Mobile Geometric Graphs: Detection, Coverage and Percolation*

We consider the following random graph model, which is motivated by mobile wireless networks. At time 0, take a Poisson point process over $R^2$ with constant intensity to be the nodes of the graph and let each node move independently according to Brownian motion. At any time $t$, we have an edge between every pair of nodes for which their distance at time $t$ is at most $r$. We study three fundamental features in this model: detection (the time until a given target point—which may be either fixed or moving—is within distance $r$ to some node of the graph), coverage (the time until all points inside a finite box are detected by the graph), and percolation (the time until a given node belongs to the infinite connected component of the graph). We obtain precise asymptotics for these features by combining ideas from stochastic geometry, coupling, and multi-scale analysis. ( Joint work with Alistair Sinclair, Perla Sousi and Alexander Stauffer.)