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On the random connection model

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The random connection model is obtained by connecting pairs of marked Poisson points according to some random rule which depends on the two marked points but is otherwise independent for different pairs. In the Gilbert graph, for instance, the points are independently marked with random radii and two points are connected if the balls around them intersect. In this case the connection does not involve any further randomness. In another special case the connection probability depends on the distance between the points but not on any further marks. In this talk we discuss some probabilistic properties of the clusters (connected components) of the graph. In particular we will use the Stein-Malliavin method to derive optimal Berry-Esseen bounds for the normal approximation of the number of clusters in a given observation window.