Geometric inference from noisy data

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Geometric inference deals with the estimation of geometric and topological quantities (e.g. curvature, Betti numbers, etc.) of a geometric object from a discrete sampling. This question appears naturally when dealing with data obtained by probing a geometric object. In this talk, we will show how a recently introduces notion of distance function to a probability measure can be used (among otherapplications) to recover the topology of a surface embedded in an Euclidean space from a finite sampling, even if the sampling is corrupted with outliers. We will also discuss some computational issues related to this question. (Common workwithChazal - Cohen-Steiner and Guibas - Morozov).