

Distance Geometry and Applications

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Resumo: The Distance Geometry Problem (DGP) asks whether a realization exists for a simple weighted undirected graph G such that distances between realized vertices u and v are the same as the weights $d(u,v)$ in G . This problem is NP-hard, and it has been receiving in recent years a growing interest from the scientific community. Many applications can be formulated as a DGP, or as problems that are closely related to the DGP. Classical examples are the NMR protein structure determination problem, sensor network localization, and clock synchronization. Close problems arise in Dimensionality Reduction and Motion Adaptation (where the dynamics of the problem plays an important role). In this talk, I will review some methods for the DGP, with some particular attention to the various applications.