

Designs in Finite Metric Spaces

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Abstract

A finite metric space is distance-degree-regular (DDR) if its distance degree sequence is the same for every vertex. A notion of design in such spaces is introduced that generalizes that of designs in Q -polynomial distance-regular graphs. An approximation of their cumulative distribution function, based on the notion of Christoffel function in approximation theory, is given. As an application we derive limit laws on the weight distributions of binary orthogonal arrays of strength going to infinity. This is an alternate proof of a result of Sidelnikov. An analogous result for combinatorial designs is derived.