Rekha R. Thomas

University of Washington, USA

Wed 18 May
7:00pm CET

Graphical Designs

Abstract: A graphical design on an undirected graph is a quadrature rule in the following sense: Given an eigenbasis of the graph Laplacian, a design is a collection of vertices of the graph (with weights) so that the weighted average of a collection of eigenvectors on this subset equals the weighted average on the full set of vertices. Depending on which eigenvectors are to be averaged, and requirements on the weights, one obtains different types of designs. Designs can be computed via linear and integer programming. In this talk I will show that positively weighted designs can be organized on the faces of a polytope, and using this connection, we compute optimal designs in several graph families. Joint work with Catherine Babecki.

Bio: Rekha Thomas received a Ph.D. in Operations Research from Cornell University in 1994 under the supervision of Bernd Sturmfels. This was followed by two postdoctoral positions, the first at the Cowles Foundation for Economics at Yale University and the second at the Konrad-Zuse-Zentrum for Informationstechnik in Berlin. She is currently the Walker Family Endowed Professor in Mathematics at the University of Washington in Seattle. Her research interests are in optimization and applied algebraic geometry.

Link to the Zoom session:
`https://us02web.zoom.us/j/81100173104?pwd=HTAZbKF9g2xEHgWl3y68G3v4oSyj9L.1`