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Abstract of Talk

MULTIPLE ORTHOGONAL POLYNOMIALS AND SOME OF THEIR APPLICATIONS

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Multiple orthogonal polynomials are polynomials in one variable that satisfy orthogonality conditions with respect to several measures. I will briefly give some general properties of these polynomials (recurrence relation, zeros, etc.). These polynomials have recently appeared in many applications, such as number theory, random matrices, non-intersecting random paths, integrable systems, etc. I will speak about two applications. The first is an extension of the Gauss quadrature formula for integrating a function, to simultaneous quadrature where one wants to integrate one function with respect to several measures. The second application is the construction of multiwavelets by means of polynomials, which uses Legendre polynomials and multiple orthogonal polynomials known as Legendre-Angelesco polynomials.