

SEMINAR

on

COMPLEX AND HYPERCOMPLEX ANALYSIS

Sala Sousa Pinto, Departamento de Matemática

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On special positive solutions of the first discrete Painlevé hierarchy

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The recurrence coefficients of a generalised symmetric Freud weight are positive solutions of a discrete equation in the discrete Painlevé I hierarchy. They also satisfy a coupled system of nonlinear differential equations. Such orthogonality weights also arise in the context of Hermitian matrix models and random symmetric matrix ensembles. In this talk I will report on some fascinating properties and structures of such special solutions of this integrable system of equations in the dP-I hierarchy, explaining the connections to other areas of mathematics. The emphasis will be on their asymptotic properties. This is a joint work with Peter Clarkson and Kerstin Jordaan.

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