



# Universidade da Beira Interior

## Departamento de Matemática

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### Seminar

## Behavior of zeros of the Geronimus perturbed orthogonal polynomials

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### Abstract

In the last years some attention has been paid to the so called canonical spectral transformations of measures. This talk is focused on the zeros of monic orthogonal polynomial sequences (MOPS in short) associated with the so called Geronimus canonical transformation, which consist of a linear rational modification together with a mass point  $N$  of a given positive Borel measure.

First, we introduce the representation of the Geronimus perturbed MOPS in terms of the initial ones and we analyze the behavior of the zeros of the corresponding MOPS. In particular, we obtain such a behavior when the mass  $N$  tends to infinity as well as we characterize the values of the mass  $N$  such the smallest (respectively, the largest) zero of these MOPS is located outside the support of the measure.

Next, we provide a complete electrostatic model of the zero distribution as equilibrium points in a logarithmic potential interaction under the action of an external field. We analyze such an equilibrium problem when the mass point is located on the exterior of the support of the initial measure.

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