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Exceptional polynomials and how to find them

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Resumen

Exceptional orthogonal polynomials arise as eigenfunctions of Sturm–Liouville problems and form complete bases in of square integrable functions with weights. Nevertheless, contrary to the classical polynomials of Hermite, Laguerre and Jacobi, their sets of degrees miss finitely many natural numbers. Since 2009, many pages have been written about their constriction and their properties, but the book is still unfinished.

In this talk, we will summarize the introductory chapters on exceptional orthogonal polynomials, focusing on their construction via Darboux transformations. We will also review some of the last lines added to the narrative in the direction of achieving their full classification.

This is based on joint works with D. Gómez-Ullate and R. Milson.

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