Szegő and para-orthogonal polynomials on the real line. Zeros and canonical spectral transformations

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We study polynomials which satisfy the same recurrence relation as the Szegő polynomials, however, with the restriction that the (reflection) coefficients in the recurrence are larger than one in modulus. Para-ortogonal polynomials that follows from these Szegő polynomials are also considered. With two particular choice of real values (positive and alternatively positive) for the reflection coefficients, zeros of the Szegő polynomials, para-orthogonal polynomials and associated quadrature rules are also studied. Finally, again for the two particular choice of real values for the reflection coefficients, interlacing properties of the Szegő polynomials and polynomials arising from canonical spectral transformations are obtained.

References

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