GENERALIZED SHAPIRO POLYNOMIALS AND PONS MATRICES

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The generalized Shapiro polynomials are a set of 2^m polynomials with a degree $2^m - 1$ and with coefficients only ± 1. These polynomials are defined solely by the set of signs of their coefficients. We investigate the properties of such polynomials, and also of the so-called PONS (Prometheus Orthonormal Set) - squared matrices, in which the elements are the coefficients of the Shapiro polynomials.

The four main results are stated in terms of hypotheses. They are related to the structure of the PONS matrices, and their Lebesgue constants. All results were validated by a computer program up to certain size of the matrices, and are explained with tables and figures.

References

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