

On Hankel Matrices Approach to Interpolation Problem in Infinite and Finite Fields

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Abstract : Interpolation problem, as it was initially posed in terms of polynomials, is well researched. However, further mathematical developments extended it significantly. Trigonometric interpolation is widely used in Fourier analysis, while its generalized representation as exponential interpolation is applicable to such problem of mathematical physics as modelling of Ziegler-Biersack-Littmark repulsive interatomic potentials. Formulated for finite fields, this problem arises in decoding Reed-Solomon codes. This paper shows the relation between different interpretations of the problem through the class of matrices of special structure - Hankel matrices.

Keywords : Berlekamp-Massey algorithm, exponential interpolation, finite fields, Hankel matrices, Hankel polynomials

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