

ON GEOMETRIC FRANK MATRICES AND THEIR PROPERTIES

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ABSTRACT

Motivated by the most recent literature, in this paper, we define a new generalization of the Frank matrix that we will call the geometric Frank matrix. In addition to considering some of its algebraic properties, we obtain its LU factorization, its determinant as well as a recurrence relation for its permanent. Upper bounds are set for the spectral norm. We also investigate similar properties for the Hadamard inverse of the geometric Frank matrix. Finally, we provide a MATLAB-R2023a code to facilitate the computation of the permanent of an arbitrary geometric Frank matrix.

Keywords Frank matrix · factorization · determinant · permanent

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