ON THE NUMERICAL APPROXIMATION OF THE MATRIX MITTAG-LEFFLER FUNCTION WITH APPLICATIONS TO FRACTIONAL CALCULUS

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The important role played by the Mittag-Leffler (ML) function in fractional calculus is widely known. Furthermore, the ML function evaluated in matrix arguments has useful applications in studying theoretical properties of systems of fractional differential equations and in finding their solution.

In this talk we introduce the ML function with matrix arguments, we review some of its main applications and we discuss the problem of its computation with the challenges it raises.

Since the evaluation at matrix arguments may require the computation of derivatives of the ML function of possible high order we discuss in detail this topic and we show some new formulas for the ML function derivatives.

References

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