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Derivatives of Mittag-Leffler Functions with Respect to their Parameters JOHN W. HANNEKEN, CAMERON W. HARVEY, B.N. NARAHARI ACHAR, University of Memphis — The Mittag-Leffler functions are natural extensions of the exponential function and appear often as solutions of differential equations of non-integer order in much the same way as exponential functions appear as solutions of differential equations of integer order. This ubiquitous nature of Mittag-Leffler functions underscores the importance of understanding the properties of these functions. In this regard, the derivatives of the Mittag-Leffler function $E_{\alpha,\beta}(-x)$ with respect to its parameters α and β have been investigated. Particularly interesting are the derivatives of $t^{\alpha-1}E_{\alpha,\alpha}(-t^{\alpha})$, which occurs as the fundamental Green's function solution to certain dynamic problems.

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