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Fractional Calculus via Laplace Transform and its Application in Relaxation Processes

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Highlights

- A unifying approach to fractional derivatives based on the theories of distributions and of Laplace transform is provided, elucidating the relation between the Riemann-Liouville and the Caputo definitions, and showing how these and other definitions can be generalized.
- The application of fractional derivatives in relaxation processes based on different definitions of fractional derivative is discussed. It is showed that models based on two recently proposed definitions have to be discarded due to problems in matching the initial conditions of the fractional differential equations.

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