KUNQUAN LAN, Toronto Metropolitan University

Have the classical Riemann-Liouville fractional integrals been fully understood before?

In this presentation, I shall present the new notion of a generalized Riemann-Liouville (R-L) fractional integral and properties including its domain and range. The new notion and properties provide new insight and understanding into the classical R-L fractional integral and its properties. Based on the new generalized R-L fractional integral, when one intends to employ the semigroup property involving the classical R-L fractional integral operator, derivative of a second order fractional R-L fractional integral operator a variety of first order fractional integral equations, one should use the generalized R-L fractional integral operator instead of using the classical R-L fractional integral operator. Therefore, some previous well-known results are not precise.