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Differentiability of a fractional difference operator and modeling applications. Preliminary report.

We will present results about continuous derivatives with respect to the order of a nabla fractional difference operator. In particular, we examine the differentiability of the Riemann-Liouville fractional difference’s order at integer values. As an application, we use least squares regression to find optimal orders for discrete fractional models from real world datasets. (Received September 16, 2019)