

A fractional differential operator of order $\alpha \in \mathbb{R}^+$ is introduced and some of its properties are studied. This operator is a generalization of the operators of Riesz-Feller, of Riemann-Liouville, of the fractional power of the Laplacian and of a class of the Jacob pseudodifferential operators. Mathematics Subject Classification: 26A33, 35S05, 60G52