

The use of fractional calculus in functional analysis

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SUMMARY

In this summary talk, we present some use of fractional calculus in different context of functional analysis. In [7], we present how Weyl fractional calculus is connected with α -times integrated semigroups. This study is extended to k -convoluted semigroups in [5]. Discrete version of this treatment are followed in [1] to apply to (C_α) -bounded operators and for discrete Cesàro bounded operators in [2].

The extension problem and fractional powers of generators of α -times integrated semigroup is studied in [3]. Fractional powers of finite difference operators in $\ell^p(\mathbb{Z})$ is presented in [4] using Banach algebras. Finally we extend this work in $\ell^p(\mathbb{N}_0)$ in [6].

Keywords: Weyl fractional calculus, integrated semigroup, finite difference equations

AMS Classification: 26A33, 47D06, 47D62

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