Functional Analysis, Mathematical Physics, and Dynamical Systems

(FAMPDS)

Joint American-Ukrainian Virtual Colloquium Series

Spring 2021

Talk 1: *Non-Archimedean Radial Calculus*

Dr. Anatoly N. Kochubei (Institute of Mathematics, National Academy of Sciences of Ukraine)

Abstract

We consider a restriction of Vladimirov's fractional differentiation operator D^α, $\alpha > 0$, to complex-valued radial functions on a non-Archimedean field. In particular, it is found to possess such a right inverse I^α that the appropriate change of variables reduces equations with D^α (for radial functions) to integral equations whose properties resemble those of classical Volterra equations. In other words, we found, in the framework of non-Archimedean pseudo-differential operators, a counterpart of ordinary differential equations. We study nonlinear equations of this kind, find conditions of their local and global solvability. Next, we begin an operator-theoretic investigation of the operator I^α, and study a related analog of the Laplace transform.

Friday, February 26, 10:00-11:00 AM (PST), 20:00-21:00 (EET)

Online via Zoom at
https://fresnostate.zoom.us/j/5233106532