

Recent advances in Real Analysis, MA 790, FALL 2023

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Real analysis plays a key role in advancing mathematical applications in Data analysis and PDE analysis and probability analysis. We develop the theory and applications.

Topics includes

- Mass transport Theory and Mean field game
 - Monge Ampere equation, Monge-Katorovitch-Wasserstein-Robinson distance
- Data Analysis and Inverse Medium problems. Optimization theory and Algorithm.
 - Neural network analysis and machine learnings.
- Hamilton-Jacobi Bellman principle for PDE optimizations and Backward stochastic differential equation.
 - Control of Fokker Planck equation and Navier-Stokes equations.