



# APPLIED MATHEMATICS SEMINAR SERIES:

## Hybrid Iterative Method based on Deep Operator Networks for Solving Differential Equations

**Date:**

10/03/2023

**Time:**

3:00 PM – 4:15 PM

**Location:**

COB1 105

**Dr. Adar Kahana**  
Brown University

**About The Speaker:**

Adar has completed his PhD. in Tel Aviv university in applied mathematics, and since then has been working as a post-doctoral researcher in the applied mathematics department of Brown University, working with Professor George Karniadakis. He also works for Microsoft as an applied scientist.



**Abstract:**

Iterative solver of linear systems is a key component for numerical solutions of differential equations, playing an important role in numerical analysis and scientific computing. While there have been intensive studies on classical methods such as Jacobi, Gauss-Seidel, conjugate gradient, multigrid methods and their more advanced variants, there is still a pressing need to develop faster, more robust, and more reliable solvers. Based on recent advances in scientific deep learning for operator regression, we propose a hybrid numerical solver for solving differential equations. Through a series of numerical experiments, we show that this hybrid solver is capable of providing fast, accurate solutions for a wide class of differential equations, some of which otherwise diverge when using other numerical solvers.

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