

Dean's Colloquium

Dr. Alsadig Ali, Assistant Professor

Department of Mathematics, Hampton University



When: Wednesday, February 12th, 2025

Where: Turner 129

Time: 2:30-2:50 pm, Q&A: 5 min

Title: Multiscale Sampling for Subsurface Characterization

Abstract: In this presentation, we address the challenging (ill-posed) inverse problem of characterizing absolute permeability in the context of predictive modeling for porous media flows. Our approach employs a Bayesian framework, coupled with a preconditioned Markov Chain Monte Carlo (MCMC) method, to tackle these inverse problems.

The key contribution of this work introduces a new multiscale sampling strategy. This algorithm decomposes the stochastic space into orthogonal complement subspaces by establishing a one-to-one mapping with a non-overlapping domain decomposition of the region of interest.

Biography: Dr. Alsadig Ali is a faculty member in the mathematics department, school of science. He joined Hampton University in August 2024. He obtained his master degree from African Institute for Mathematical Sciences (AIMS) in 2014. He pursued his doctoral study at the University of Texas at Dallas in 2021. He worked as a research scientist in the University of Texas at Dallas. His research interests are in computational mathematics, uncertainty quantification problems, Bayesian statistics, and data science.