

Dean's Colloquium

Dr. Lanre Akinyemi, Assistant Professor
Department of Mathematics, Hampton University



When: Wednesday, February 7, 2023

Where: Turner 129

Time: 3:30 – 3:50 pm, Q&A: 10 min

Title: Shallow ocean soliton through extended (2+1)-dimensional nonlinear evolution equation

Abstract: In recent years, the derivation and solutions of integrable nonlinear evolution equations (NLEEs) in one, two, or more dimensions have been the apex in the field of applied mathematics. As is well known, NLEEs can describe a wide variety of nonlinear physical phenomena in the fields of applied science and engineering. In this work, the integrability, shallow ocean wave soliton, and multi-soliton for extended (2+1)-dimensional NLEE is investigated. The Painlevé test is used to analyze the integrability of this model, and its bilinear form is constructed using the simplified bilinear approach. Thereafter, we used the Hirota bilinear method to construct the multi soliton solution. The shallow ocean waves for the X-, Y-, and H-types, as well as other complex interactions are replicated by the two, three, and four soliton solutions. These structures are illustrated by graphs.

Biography: Dr. Akinyemi joined HU in August 2023 as a faculty member of the Department of Mathematics. Dr. Akinyemi has excellent teaching and research accomplishments at Ohio University, Prairie View A&M University, and Lafayette College. He has an extensive record of scholarly achievements and publications, with more than 140 refereed articles in high-impact factor journals. For two consecutive years (in particular, 2022 and 2023), he has been named in the world's top 2% of scientists by Stanford University and Elsevier. His research interests include analytical and numerical methods for differential equations, soliton theory and its applications, fractional differential equations and their applications, mathematical modeling of flow in porous media, statistical analysis, and mathematical modeling of infectious diseases.