Franklin & Marshall College
and
Millersville University

A *Virtual* Joint Colloquium in Mathematics

Thursday, October 1st, 2020, 4:00–5:00pm EDT

`https://fandm.zoom.us/j/99693312773`

Zhengyi Xiao
F&M student

A C_0-Semigroup approach to find a class of finite-difference methods for inhomogeneous damped wave equations

Abstract: In this talk, we will present a class of numerical techniques for finite difference methods to solve the inhomogeneous damped wave equation. The results obtained are compared to the exact solutions as well as ordinary explicit and implicit finite difference methods. The key idea of our approach is to use the C_0-semigroup operator theory. At the end of this talk, we will also show some results on the fractional type damped wave equation.

Gregory Heilbrunn & Mitchell Young
F&M students

Factorization in $T_n(\mathbb{N}_0)^\bullet$ and $M_2(\mathbb{N}_0)^\bullet$

Abstract: Just as positive integers can always be factored into their prime components, elements in many other semigroups can also be factored into irreducible elements or atoms. The classification of these irreducible elements and the study of how elements factor as a product of atoms is a branch of mathematics called Factorization Theory. Historically, the focus has been on factorization in commutative semigroups, and only recently has an investigation of noncommutative settings been undertaken. We study two noncommutative semigroups of matrices. One semigroup is all 2×2 matrices with nonnegative integer entries. The other semigroup is all $n \times n$ triangular matrices with nonnegative integer entries. In both of these semigroups, factorization is non-unique. We show this by computing several numerical invariants.

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