Mechanical Engineering Seminar Series

September 23rd, 2025, 11:00AM

EIS 104

Title: Solving Partial Differential Equations using the MOLE Library

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Abstract: Mimetic difference methods are numerical methods based on mimetic operators to solve partial differential equations (PDEs). Mimetic Operators are discrete analogs of the divergence, gradient, and curl operators from vector calculus. These discrete operators satisfy in the discrete sense the same vector calculus identities as their counterparts do, making them more faithful to the physics described by the partial differential equation. I will give an overview of these operators and will show how we use the Mimetic Operators Library Enhanced (MOLE) to solve PDEs.

MOLE Webpage is Live:
https://lnkd.in/gTVUM53Y
And the archival copy of the MOLE User Manual is published on Zenodo:
https://lnkd.in/g37QEmim
The MOLE community always welcomes users and collaborators.

Brief Bio: Dr. Castillo is the Founder and Director of the Computational Science Research Center and the Computational Science Program at SDSU. His current research focus is on high-order mimetic difference methods for solving partial differential equations.