DEPARTMENT OF
PHYSICS &
ASTRONOMY

Physics & Astronomy
Colloquium

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Prof. Marwan Gebran

Saint Mary's College

(Host: Prof. Elias Aydi)

3:30 - 4:30 p.m. | Tuesday, March 10, 2026

Rm: ESB I 120

Zoom Meeting: https://texastech.zoom.us/my/yunsukeo

(passcode: 621827)

Conditional Variational AutoEncoders in stellar Spectroscopy

I will be introducing a spectra generation tool based on Conditional Variational AutoEncoders. The model is trained on a grid of SYNSPEC spectra and ATLAS model atmospheres. The network is capable of synthesizing a spectrum in any spectra range and around two orders of magnitude faster than line-by-line radiative transfer. The CVAE can serve as a drop-in, physics-aware surrogate for radiative transfer codes, enabling real-time forward modeling in stellar parameter inference and offering promising tools for spectra synthesis for large astrophysical data analysis.