

2026 Spring MD-DC-VA Section Meeting

Student Poster Session

Sustaining a Moon Colony in 2050

Rechnna Teda Sok, Sean Miller, Isabella Aguilar Fricke
Virginia Military Institute

Analyze and determine how to transport supplies and materials to the Moon to establish a 100,000 person colony. Taking into consideration; Methods of transportation, fuel, water supply, and environmental impact.

Year 2147 – Earth’s First Moon Colony

Andrew Kohan, Jason Drivas, Woodward Tran
Virginia Military Institute

Our project is an investigation of the logistical and mathematical requirements to build a colony on the Moon. Specifically, we were asked by the fictional Moon Colony Management (MCM) agency to look into how long it would take to move 100,000,000 metric tons of materials to construct a 100,000-person colony. Relying on three Galactic Harbors along the Earth’s equator and ten traditional launch sites around Earth’s surface, we calculated the timeline for this project given varying assumptions. These calculations showed us that construction, beginning in the year 2050, would take 91 years. Additionally, 5.62 years would be required to move enough water to sustain the colony for 1 year of survival. This solution would be achieved by launching 2 rockets from each Galactic Harbor and each of the 10 launch sites per day, every day.

Applying Wavelet Based Denoising to ESR Spectra

Anthony Cortez, Easton Crockett
Hampden-Sydney College

Electron spin resonance (ESR) spectroscopy is a field of study in Chemistry that analyzes unpaired electrons in molecules. Spectra signals, the medium for ESR analysis, are often distorted and obscured by noise. Wavelet-based denoising methods aim to improve clarity while retaining spectral features. This research employed NERD, a wavelet-based denoising program for ESR spectra, and the continuous wavelet transform for ESR spectral analysis and coupling constant determination. Successful denoising was achieved for several molecules, including biphenylene, anthracene, and phenalenyl. However, for the molecule curcumin, since accurate spectra signals are unknown, our accuracy remains unknown until viable accuracy checks are developed in a later stage of this research. This project also contributes to current research into viable denoising tools and coupling constant extraction methods in ESR spectroscopy.

Determining Franchise Success in the WNBA

Evan Moore, Benjamin Davis, Rylan Adamson
Virginia Military Institute

Our Poster outlines the model we made to maximize profits in WNBA team, specifically the Indiana Fever.

Quantum Degrees with Maya Diagrams in Odd Orthogonal Partial Flag Varieties
Stephen Barr
Salisbury University

We refine the criterion of Fulton and Woodward for the smallest powers of the quantum parameter q that occur in a product of Schubert classes in the (small) quantum cohomology of the odd orthogonal partial flag variety $OF := OF(1, 2; 2n + 1)$. Our approach uses Maya diagrams and yields a combinatorial proof that the minimal quantum degrees are unique for OF .