Mark Van Selous

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Work Experience

NASA Double Asteroid Redirection Test (DART) Mission   **5/21 – Current**
- Using the DeepThought2 high performance computing cluster to model the dust plume following the collision of the DART spacecraft with Dimorphos.

NASA Planetary Data System (PDS): Small Bodies Node (SBN)   **1/21 – Current**
- Modeled the sublimation of ices in the rapid rotator model
  - https://pds-smallbodies.astro.umd.edu/tools/ma-evap/index.shtml
- Created the Rough Spheroid Modeling Database
  - cosmicdust.astro.umd.edu

UMD Experimental Mathematics Lab   **1/21 – 6/21**
- Developed an algorithm to explicitly solve for any element in the family of Kenyon translational self similar tilings. In particular, my code returns the Anderson-Putnam complex and image of the requested tiling.

Britton Lab, Joint Quantum Institute   **9/20 – 10/20**
- Determined the frequencies of thermal drift in a roughly 1550 nm laser via wavelet analysis.

Maryland University Training Reactor (MUTR), Simulation Programmer and Technician   **5/19 – 12/19**
- Programmed an interactive status board for the MUTR and its experimental ports.
- Designed & developed simulations of the MUTR. They were applied to a ramp analysis.
- Developed an algorithm and accompanying GUI for calculating control rod worth curves. This software has been written into NRC approved procedures for an annual recalibration.
- Experienced in operating and/or repairing fluorometers, spectrophotometers, sodium iodide detectors, neutron meters, ion meters, and geiger counters.
- NRC Trustworthiness and Reliability License: unescorted access to radioactive materials.
- Official Training: Radiation Producing Devices, Materials; Radiation Facilities LINAC.

Cosmic Ray Energetics and Mass Experiment (CREAM)   **10/18 – 2/19**
- Assisted with hardware repairs, and drawing electrical schematics

Education
- University of Maryland, College Park, MD   Expected Graduation: May 2022
- B.S., Physics and B.S., Mathematics (Dual Degree)   3.65 GPA
- President's Scholarship and two times Angelo Bardasis Memorial Scholarship Recipient
- Completed Coursework (Highlights): Applied Machine Learning, Partial Differential Equations, Mathematical Methods of Statistics, Transform Methods, Quantum Mechanics 1

Programming Skills Highlights
- Web development and server deployment (FLASK with apache)
- High performance computing (using both Slurm and PBS as schedulers)
- Machine Learning (predominantly with pytorch and keras)
- Quantum computing (with Qiskit on both real and simulated quantum computers)
- Python, Kotlin, BASH, git, Linux (ubuntu), Unix, FORTRAN 77

Concerns:
1) Britton Lab and CREAM are one liners
2)