DEVELOPMENT OF RADIATION TOLERANT COMPUTER SYSTEMS TO BE USED IN ORBIT

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The objective of this research project is to further push the development of Montana State University's RadSat project. The project is a small satellite mission funded by NASA to explore the capability of radiation proof computers in space. Nearly all of the radiation we see in space is blocked by our earth's atmosphere, therefore the computers we use on earth won't function properly in space. The computer accomplishes this task through software advances. The system uses a triple redundancy cycling system that has the ability to detect and cycle to another computer chip in order to avoid the radiation occurrence. This system accommodates nine computer chips that allow the computer to mitigate multiple occurrences of radiation in quick succession. A version of this unit is currently on the International Space Station and has been functioning properly for over eight months now. For this project we will be in a standalone satellite in order to expose the technology to an environment with harsher radiation. A standalone satellite requires a complete redesign from last year's model and will now include solar panels, a battery storage system, radio communication, magnetic alignment equipment, and a whole new avionics computer stack. All of these components will be housed within a CubeSat 3U chassis with all of the internal structure made custom here at Montana State University. The satellite will be launching from Wallops Flight Facility on Mat 1st to the International Space Station. If this mission proves to be successful as well the goal or reaching TRL9 will be achieved.

Additional Abstract Information

Presenter: Gabriel Van Dalsem

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Time and Location

Session:	**Poster 4**
Date/Time:	**Thu 3:40pm-4:40pm**
Location:	Wellness Center - Tripod 2 Side B