UNDERGRADUATE RESEARCH AND CREATIVE ACTIVITIES (URCA) COLLOQUIUM

Physics major Reuben Demirdjian participated in the 2012 URCA Colloquium on May 17, presenting a poster describing his research involving solar flare measurements.

Infrared Solar Flare Measurements

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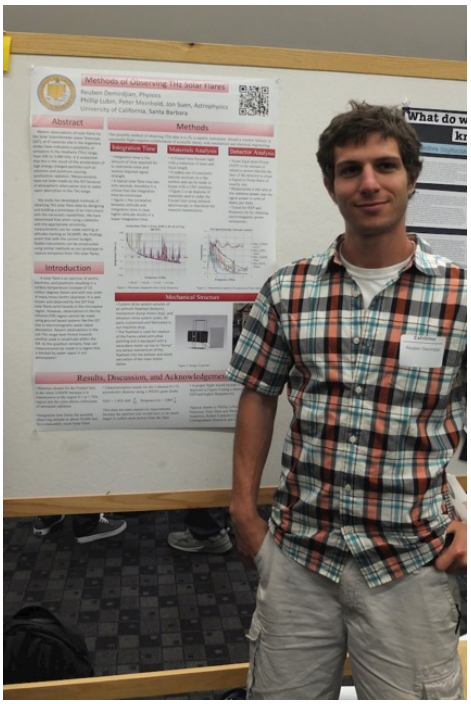
Abstract - Recent observations of solar flares by the Solar Submillimeter-wave Telescope (SST), at El Leoncito site in the Argentina Andes have indicated a possibility of emissions in the Terahertz (THz) range, from 100 to 3,000 GHz. It is suspected that this is the result of the acceleration of high energy charged particles such as electrons and positrons causing incoherent synchrotron radiation. Measurements in the THz range have not been made by the SST because of atmospheric attenuation due to water vapor absorption. An observation of THz solar flare radiation would give us further insight into the characteristics of these enormous eruptions.

This study has developed methods of obtaining THz solar flare data by use of an instrument capable of high altitude flight. The methods have been developed by the design and construction of a prototype instrument. Discussion on the scientific feasibility, mechanical system, detector system, and optics are all critical for carrying out a successful flight.

We have determined that a detector with the appropriate sensitivity can obtain measurements starting at altitudes of 30,000ft. These findings assert that flyable instruments can be constructed using similar methods as our prototype to capture emissions from THz solar flares.



About URCA

The mission of the Undergraduate Research and Creative Activities (URCA) Unit in the College of Letters and Science is to promote the scholarly work of undergraduate students and to provide resources for undergraduates to pursue independent research and creative activities under the guidance of faculty mentors.

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