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Laser Radar, Environmental Optics and Undergraduate Research

NIMMI SHARMA, Central Connecticut State University — At Central Connecticut State University (CCSU) we have developed a vibrant research program in laser radar and environmental optics which actively involves undergraduates. Laser radar (also known as LIDAR) is a technique in which laser light is scattered off a target and the scattered return is analyzed to derive distance to the target and target properties. In the CCSU Laser Atmospheric Studies and Environmental Research (LASER) group, we design and develop LIDAR systems, use LIDAR to transmit visible laser light into the atmosphere to investigate atmospheric aerosols (suspended particulates which impact climate and air quality), conduct multi-instrument studies to increase our understanding of local, regional and global atmospheric characteristics, pollution and dynamics, and develop collaborations with national and international partners. The group is centered on involving undergraduates in research and builds students' skills in an environment that stresses both teamwork and independent initiative. This paper describes projects in the research group and the processes that have been found to be successful in building and sustaining an undergraduate research group.

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