UCI Samueli School of Engineering | Department of Mechanical and Aerospace Engineering

Seminar Series

Technology Developments for FIR Bolometric Detector Focal Plane Assemblies

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Abstract: A discussion of recent technology developments for far-infrared bolometric detector focal plane assemblies is provided. Some of the developments include strategies for fabricating high filling fraction background limited-transition edge sensor bolometric detectors, impedance-matched absorber coatings, a micromachined blackbody source, and the capability to fabricate indium bumps on non-planar substrates.

Bio: Dr. Brown's interests include the development of new detector systems, new detector fabrication processes, and novel materials. He was the detectors fabrication subsystem lead on the HIRMES project, to develop background limited far-infrared cryogenic bolometric detectors on single crystal silicon substrates with novel, patented, absorber coatings. He has also developed novel materials for microwave kinetic inductance detector applications, metal mesh bandpass filters suspended on micromachined Si frames for far-IR applications, novel THz absorber materials, uncooled thermopile detectors, electroplated cantilevered absorbers for X-ray applications, and delivered the R-64 Microspec spectrometers on-a-chip as the fabrication lead. Most recently, he is leading the fabrication of the lowest noise equivalent power, high filling fraction, bolometric far-IR detectors ever developed at NASA Goddard Space Flight Center. He was a recipient of the NASA Exceptional Engineering Metal in 2017. He has been working at NASA Goddard Space Flight Center since 2005 and received his Ph.D. in Physics and Astronomy from Johns Hopkins University in the same year.