

Abstract Submitted  
for the MAR16 Meeting of  
The American Physical Society

**Nonlinear Response in Silicon Solar Cells**<sup>1</sup> BEHRANG HAMADANI, JOHN ROLLER, ANDREW SHORE, HOWARD YOON, National Institute of Standards and Technology, NIST COLLABORATION — A light emitting diode (LED)-based system utilizing a combinatorial flux addition method was used to measure the nonlinear relationship in silicon solar cells between the output current of the cell and the incident irradiance level. The light flux was controlled by the supplied current to two sets of LEDs, of either monochromatic light or a combination of various wavelengths. The (non)linearity of a variety of cells were measured over many orders of magnitude of light intensity and various trends were observed, including a transition from nonlinear to linear behavior for some cells as a function of intensity or a complete nonlinear response throughout the probed range. Furthermore, nonlinearity was found to be spectral dependent. An explanation for the observed behavior based on fundamental physics will be provided.

<sup>1</sup>Nonlinear Response in Silicon Solar Cells

Behrang Hamadani  
National Institute of Standards and Technology

Date submitted: 04 Nov 2015

Electronic form version 1.4