

Abstract Submitted
for the TSF19 Meeting of
The American Physical Society

Spectral X-ray Scatter Correction with an Energy Resolved Photon-Counting Detector¹ CALE LEWIS, MINI DAS, University of Houston, MEDIPIX COLLABORATION (CERN, GENEVA) COLLABORATION — Photon-counting detectors (PCDs) with energy-resolving capabilities are being investigated for x-ray imaging in medical applications. The spectral information obtained with PCDs allow for quantitative material identification of structures within the imaged object. Radiation that scatter from the object obscures the transmitted primary intensity and impedes accurate material identification. Although scatter correction methods have been widely developed for conventional energy-integrating detectors (EIDs), the spectral impact of the object scatter is only recently being investigated. We have explored the effectiveness of a scatter correction method previously designed for conventional EID imaging when applied to spectral imaging with PCDs. This technique relies on a scatter map database generated from homogeneous slabs of varying thickness with equivalent material and geometry as the object. Subtracting the object projection by the appropriate scatter map improves the image quantification. This practical technique provides an effective scatter correction without relying on additional exposure to the patient.

¹This research was supported by the US Department of Defense (DOD) CDMRP Breakthrough Award BC151607 and the National Science Foundation CAREER Award 1652892.

Cale Lewis
University of Houston

Date submitted: 30 Sep 2019

Electronic form version 1.4