3rd Allpix Squared User Workshop

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Allpix2 Simulations of Particle Interactions in Cell Phone Camera Image Sensors for DECO

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The Distributed Electronic Cosmic-ray Observatory (DECO) is a cell phone app which uses the cell phone camera image sensor (CMOS) to record images of ionizing radiation from cosmic rays or radioactivity. A convolutional neural network (CNN) is used to classify these images according to their morphology, which indicates particle identity and energy. In this project, we use Allpix^2 to simulate the CMOS sensor and images produced by ionizing radiation. After classification by the CNN, these simulated events are compared against DECO collected real events both individually and collectively. The simulation parameters are adjusted according to the comparison result to improve data - Monte Carlo agreement.

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