

The localization of radiation sources using particle imaging systems has proven to be a valuable method for scenarios in nuclear safeguards and verification. This work will demonstrate new special nuclear material measurements using a recently developed dual-particle imaging system composed of organic glass and CeBr₃ scintillators. The work also introduces a newly developed application on an augmented reality headset that uses the imaging information collected during a measurement to convey source locations in a mixed reality environment in real time. The results will report on gamma ray and fast neutron imaging performed on special nuclear material sources like weapons grade plutonium and highly enriched uranium. These series of measurements were performed thanks to the collaboration efforts between the MTV consortia, LLNL, and NCERC. We will also discuss the infrastructure behind the mixed reality data visualization software. Video demonstrations of the application using real-time measurements taken at the University of Michigan will also be shown. The results will explore capabilities like being able to swap between imaging modes and other general improvements for the user experience.