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SLAC T-510: Experimental validation of particle-level simulations of radio emission from particle cascades

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The SLAC T-510 experiment measured radio emission from particle cascades in a controlled laboratory setting. An electron beam incident upon a dense dielectric target produced a particle cascade in the presence of a strong magnetic field. The goal of the experiment was to compare controlled laboratory measurements of radio emission to predictions using particle-level simulations. We previously reported the agreement between data and simulations within systematic uncertainties, the largest being the reflection of radio emission within the target. A follow up experiment has since been carried out to characterize the reflections and include them in simulations. In this contribution we report these new results, which show the uncertainties in the experiment are greatly reduced, and the features in the observed emission are well understood.

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