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A detailed comparison of REAS3 and MGRM radio emission simulations

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Two very different approaches have been developed for the modelling of radio emission from cosmic ray air showers: the geosynchrotron model, implemented with Monte Carlo techniques in REAS3, and the MGMR model, based on a macroscopic description of transverse currents. Comparing the predictions of these very different models is a powerful way to gauge our understanding of radio emission theory. In this presentation, we show a direct comparison of radio emission simulations with both REAS3 and MGRM. We demonstrate that, for the first time, two completely different models produce similar results, except for regions of parameter space where the differences in the underlying air shower model become important.

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