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The EVA code; Macroscopic modeling of radio emission from air showers based on full MC simulations including a realistic index of refraction.

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A comprehensive overview of the newly developed EVA-code will be given by making a direct comparison to the MGMR-code. Both codes perform a macroscopic calculation of radio emission from cosmic-ray-induced air showers. The MGMR-model is based on parameterized shower distributions ignoring the lateral extend of the shower. Furthermore, all calculations ignored Cherenkov effects. To take into account Cherenkov effects and include realistic showers in combination with shower-to-shower fluctuations we have developed the EVA-code (Electric fields, using a Variable index of refraction in Air shower simulations code). The EVA-code is a full Monte-Carlo simulation for radio emission from cosmic-ray-induced air showers. The EVA-code makes use of the finite dimensions of the particle distributions to overcome the divergences in the fields due to Cherenkov effects without making any approximations.

Primary author: DE VRIES, Krijn D. (KVI/University of Groningen)

Co-authors: WERNER, Klaus (SUBATECH, Université de Nantes); SCHOLTEN, Olaf (KVI/University of Groningen)

Presenter: DE VRIES, Krijn D. (KVI/University of Groningen)

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