Parametrization of the Relative Amplitude of Geomagnetic and Askaryan Radio Emission from Cosmic-Ray Air Showers using CORSIKA/CoREAS Simulations

Flash Talk
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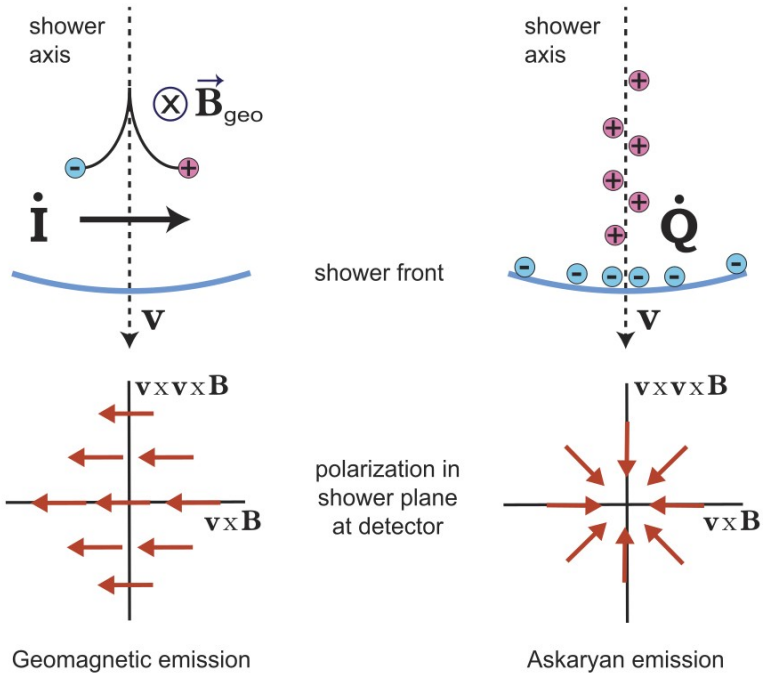
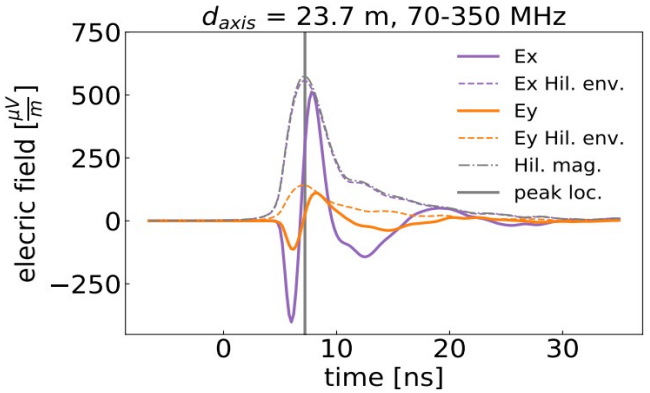
Radio emission from cosmic rays



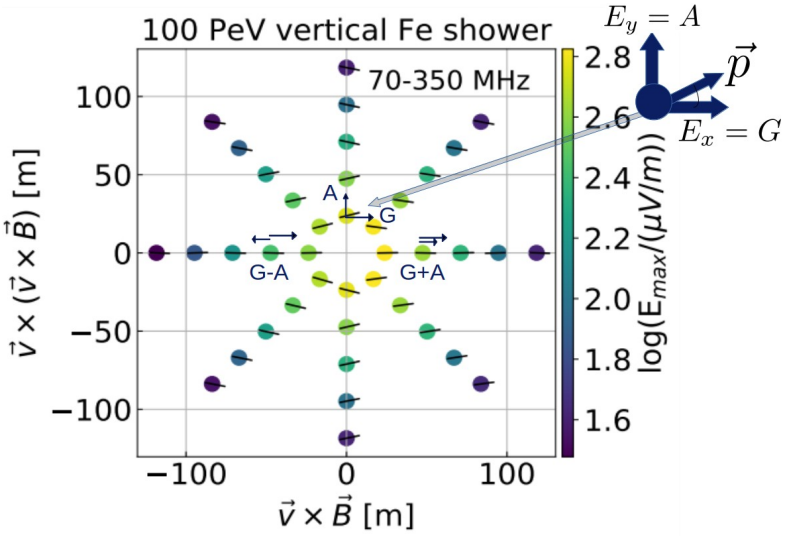
F. Schroeder, PPNP 93 (2017) 1

CORSIKA/CoREAS simulations



$$\frac{G}{A\sin\alpha} = \frac{|E_x|}{|E_y\sin\alpha|}$$

$$SNR = \left(\frac{Signal_{peak}}{Noise_{rms}}\right)^2$$



SNR cut (>10^4)

Parameterization

$$R = \frac{G}{A \sin \alpha}$$

$dX_{max}(R) = -474 + 46.7R + 2R^2$

Relative amplitude clearly correlated with dX_{max}, but spread too large for precise reconstruction of shower maximum