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Adding interferometric lightning detection to the Pierre Auger Observatory

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The Pierre Auger Observatory has detected downward terrestrial gamma-ray flashes (TGFs) with its Surface Detector. A key to understanding this high-energy radiation in thunderstorms is to combine such measurements with measurements of lightning processes in their earliest stages. With eleven modified Auger Engineering Radio Array (AERA) stations we can build an interferometric lightning detection array working in the bandwidth between 30 –80 MHz inside the Surface Detector array to precisely measure lightning stepped leaders in 3D. These measurements allow us to decipher the cause of TGFs and clarify the reason for the observed high-energy particles in thunderstorms.
We will present the current status of the detection plans including the configuration of the interferometric lightning detection array and the steps to take as well as the reconstruction characteristics obtained with AERA.

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