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Measuring the speed resolution of extensive air showers at the Southern Pierre Auger Observatory KATHLEEN GESTERLING, University of New Mexico, FRED SARAZIN, Colorado School of Mines, PIERRE AUGER OBSERVATORY COLLABORATION — Ultra-high energy cosmic rays induce extensive air showers (EASs) in Earth's atmosphere which are assumed to propagate at the speed of light. The fluorescence detector (FD) at the Southern Pierre Auger Observatory detects the light signal from the EAS and directly measures the energy of the cosmic ray. When two or more FD sites observe an event, the geometry of the shower can be calculated independently of the velocity it is traveling. It is then possible to fit the time profile recorded in the FD using the shower speed as a free parameter. The analysis of a collection of stereo events allowed us to determine with what speed resolution we can measure EASs with sensitivity to subluminal components. Knowing the speed resolution we can look for objects propagating significantly below the speed of light.

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