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## Simulation of Double-Bang Events in the Atmosphere

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### Abstract content

We use CORSIKA+Herwig simulation code to produce ultra-high energy neutrino interactions in the atmosphere. Our aim is to reproduce extensive air showers originated by extragalactic tau-neutrinos. As we have no code available which can simulate the tau-neutrino as primary particle in the atmosphere, we use muon-neutrino as primaries. For charged current tau-neutrino interactions in the atmosphere, it is expected that a tau is produced and may decay before reaching the ground. That phenomenon makes possible the generation and detection of two extensive air showers, the so called Double-Bang events. We simulate the tau decay using interactions of pions in the atmosphere. In spite of those two approximations, muon-neutrino first interaction instead of tau-neutrino and pion interaction instead of the tau decay, we can make a quantitative analysis of the main characteristics of the Double-Bang events that may be observed in the atmosphere with ultra-high energy cosmic ray observatories.

**If this papers is presented for a collaboration, please specify the collaboration**

### Summary

### Reference

Proceedings of the 30th International Cosmic Ray Conference; Rogelio Caballero, Juan Carlos D'Olive, Gustavo Medina-Tanco, Lukas Nellen, Federico A. Sánchez, José F. Valdés-Galicia (eds.); Universidad Nacional Autónoma de México, Mexico City, Mexico, 2008; Vol. 5 (HE part 2), pages 1381-1384

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