Contribution ID: **72** Type: **poster**

RASTA - Radio detection of cosmic rays at South Pole

The Radio Air Shower Test Array (RASTA) project explores the opportunity to enhance the IceCube Neutrino Observatory by measuring cosmic ray air-showers using radio detection. Radio signals in the 10-250 MHz region are produced by the deflection of the charged constituents of cascades in the Earth's magnetic field, providing a calorimetric measurement of the electron/positron component of air-showers at altitude. This technique can supplement measurement of energetic muons by IceCube's deep ice sensors and of the electromagnetic component at the surface by IceTop. It will thus improve Icecube's measurement of cosmic ray primary composition. Since January 2011 continuous data taking at a test installation using two antennas provides unprecedented precision on the radio background at South Pole. First self triggered air showers will be measured with an improved setup to be installed in January 2012. We will present results of these measurements and status of simulations showing the potential of such a detector.

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