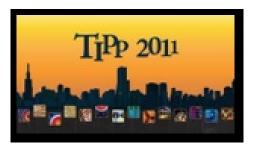
## TIPP 2011 - 2nd International Conference on Technology and Instrumentation in Particle Physics



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## Radio propagation environment analysis for neutrino radio detection in salt mines

Neutrinos cannot be directly detected, but they can be indirectly observed through their interactions with ordinary matter in which secondary particles are created. A neutrino detector is a complex system in which the electromagnetic field from secondaries is measured, in a huge volume instrumented with antennas. From the characteristics of the field one can derive the properties of the initial neutrino.

"DETection of COSmic rays using new technologies" (DETCOS) is a Romanian national project that investigates the possibility of constructing a radio Askaryan neutrino observatory in a Romanian salt mine. We consider a detection strategy based on coherent radio Cherenkov emission from neutrino-induced showers produced in current charged interactions.

Many aspects are considered, such as: the effect that the dielectric medium has on the amplitude of radio signal; how the pulse couples to a realistic receiver; behavior of the key instrument –i.e. the radio antenna; the signal-to-noise ratio (SNR). Another critical aspect to be taken into consideration is the random triggering rate. The detailed detector description, optimization and expected performance will be also presented.

Author: Mrs BADESCU, Alina (POLITEHNICA University of Bucharest)

**Co-authors:** Mrs SAFTOIU, Alexandra (IFIN-HH); Dr MITRICA, Bogdan (IFIN-HH); Prof. TOMA, Gabriel (IFIN-HH); Dr BRANCUS, Iliana (IFIN-HH); Prof. LAZANU, Ion (UB); Prof. FRATU, Octavian (UPB); Prof. SIMA, Octavian (UB); Prof. HALUNGA, Simona (UPB); Prof. PETRESCU, Teodor (UPB)

**Presenter:** Mrs BADESCU, Alina (POLITEHNICA University of Bucharest)

Track Classification: Detectors for neutrino physics