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KM3NeT sensitivity to neutrino bursts from galactic supernovae

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A very large volume Mediterranean neutrino telescope (KM3NeT), designed and optimised for detection of Cherenkov light from interactions of neutrinos with energies above about 100 GeV, could be sensitive to an intense neutrino burst from the core collapse of a massive star in our Galaxy. In a short time interval during the burst (~10 s) the total amount of Cherenkov photons produced by low-energy (~10 MeV) neutrino interactions in the sea water rises well above the usual background level. The main source of these photons are positrons from interactions of electron anti-neutrinos with the free protons in water.

The KM3NeT detector could be considered as a possible member for the SuperNova Early Warning System (SNEWS), an international network of neutrino experiments with the goal of providing an early warning of a galactic supernova. The possibilities for the detection of supernova signal with KM3NeT will be discussed in this talk.

Auteur principal: Dr SHANIDZE, Rezo (ECAP/University of Erlangen)

Orateur: Dr SHANIDZE, Rezo (ECAP/University of Erlangen)

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