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Search for neutrino emission of gamma-ray flaring blazars with the ANTARES telescope

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The ANTARES telescope, with a duty cycle close to unity and a full hemisphere of the sky at all the times visible, is well suited to detect neutrinos produced in astrophysical transient sources. Assuming a known neutrino production period, the background and point-source sensitivity can be drastically improved by selecting a narrow time window around it. Blazars are radio-loud active galactic nuclei with their jets pointing almost directly towards the observer. They are particularly attractive potential neutrino point sources, since neutrinos and gamma-rays may be produced in hadronic interactions with the surrounding medium as they are the most likely sources of the observed ultra high energy cosmic rays. A strong correlation between the gamma-ray and the neutrino fluxes is expected in this scenario.

ANTARES data collected between 2008 and 2011 is analyzed by an unbinned method based on the minimization of a likelihood ratio. The sensitivity of a standard time-integrated point source search in such period has been improved by a factor 2-3 by looking for neutrinos detected during the high state periods of the the gamma-ray light curves of the AGN candidates. The typical width for a flare ranges from 1 to 20 days depending on the source. The results of this analysis will be presented.

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