

## Annual modulation of the atmospheric muon flux measured by the OPERA experiment

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The OPERA detector was used to measure the annual modulation of the atmospheric muon flux at the Gran Sasso underground laboratory (3800 m w.e.). We present preliminary results using 5 years of data (2008-2012) showing a flux modulation with a period of 1 year and a relative amplitude of 1.5%. The phase of the maximum intensity and the effective temperature coefficient  $\alpha_T$ , which correlates variations in the muon rate and seasonal temperature variations, are both in agreement with theoretical expectations and other experimental results at LNGS.

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