Search for diphoton events with large missing transverse energy with 36 pbÂ¢Ê†â€™1 of 7 TeV protonÂ¢â‚¬Å“proton collision data with the ATLAS detector

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Abstract

Making use of 36 pb-1 of proton-proton collision data at $\sqrt{s}$ = 7 TeV, the ATLAS Collaboration has performed a search for diphoton events with large missing transverse energy. Observing no excess of events above the Standard Model prediction, a 95% Confidence Level (CL) upper limit is set on the cross section for new physics of σ < 0.38-0.65 pb in the context of a generalised model of gauge-mediated supersymmetry breaking (GGM) with a bino-like lightest neutralino, and of σ < 0.18-0.23 pb in the context of a specific model with one universal extra dimension (UED). A 95% CL lower limit of 560 GeV, for bino masses above 50 GeV, is set on the GGM gluino mass, while a lower limit of 1/R > 961 GeV is set on the UED compactification radius R. These limits provide the most stringent tests of these models to date.