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Study of di-photon events in the ATLAS detector at the LHC : cross-section measurement and application to Higgs searches in the di-photon channel

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<p>The measurement of the isolated di-photon cross-section at the LHC is crucial as these events constitute an irreducible background to new physics processes, such as a Higgs boson or graviton decaying to two photons. These events also provide important information for the understanding of QCD processes. The di-photon cross-section has been measured in ATLAS using the full 2010 data sample, corresponding to an integrated luminosity of 37 pb-1. Results as a function of the di-photon invariant mass, transverse momentum and azimuthal separation are presented and compared with NLO theoretical predictions. Focusing on the invariant mass region between 100 and 150 GeV where a light Higgs boson is searched for in the di-photon channel, exclusion limits are set on the Standard Model prediction. The results obtained are already at the level of the results from TeVatron experiments in this channel.

Level (Hons, MSc,
   PhD, other)?

PhD

Consider for a student
   award (Yes / No)?

No

Would you like to <br> submit a short paper <br> for the Conference
 Proceedings (Yes / No)?

Yes

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