Title: Study of proton–proton and heavy-ion collisions with the ATLAS experiment at the LHC

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Abstract: The presented results show a suppression in a production of charged hadrons in heavy-ion collisions with respect to the production measured in proton-proton collisions. Lead–lead data at $\sqrt{s_{\mathrm{NN}}} = 2.76\,\mathrm{TeV}$ were recorded by the ATLAS experiment at the LHC in 2010 and 2011 and they have a total integrated luminosity of $0.15\,\mathrm{nb}^{-1}$, and proton-proton data at $\sqrt{s} = 2.76\,\mathrm{TeV}$ were recorded in 2011 and 2013 having an integrated luminosity of $4.2\,\mathrm{nb}^{-1}$. The results are presented in wide transverse momentum ($0.5 < p_{\mathrm{T}} < 150\,\mathrm{GeV}$) and pseudorapidity ($|\eta| < 2$) ranges, and also in different centrality intervals of Pb+Pb collisions. Nuclear modification factor R_{AA} shows a clear p_{T}-dependence with a minimum at around 7 GeV, however above 60 GeV, it reaches a plateau with no significant p_{T}-dependence. As a function of $|\eta|$, the R_{AA} is flat over whole p_{T} region.

Keywords: ATLAS detector, heavy-ion collisions, charged-hadron spectra, nuclear modification factor R_{AA}