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Constraints on the Intrinsic Charm Content of the Proton from Recent ATLAS Data

Constraints on the intrinsic charm probability $W_{c\bar{c}} = P_{c\bar{c}}/p$ in the proton are obtained for the first time from LHC measurements. The ATLAS Collaboration data for the production of prompt photons, accompanied by a charm-quark jet in pp collisions at $\sqrt{s} = 8$ TeV, are used. The upper limit $w_{c\bar{c}} < 1.93$ % is obtained at the 68 % confidence level. This constraint is primarily determined from the theoretical scale and systematical experimental uncertainties. Suggestions for reducing these uncertainties are discussed. The implications of intrinsic heavy quarks in the proton for future studies at the LHC are also discussed.

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