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Applications of JIMWLK Evolution to Exclusive J/Psi Production

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The Large Hadron Collider, located at the European Centre for Nuclear Research, is the most powerful particle collider ever built. The ATLAS experiment at the LHC uses the proton and heavy ion collisions produced in this 27 km long collider to probe the predictions and limitations of the Standard Model. Due to the high energies employed, collisions are able to probe a regime known as the Colour Glass Condensate (CGC): a medium characterized by a part of the hadronic wavefunctions being dominated by nonperturbatively large gluon occupation numbers. The JIMWLK equation is a mathematical tool used to predict some of the physical observables within the CGC framework. By exploiting appropriate exclusive interactions (where at least one of the protons does not break), this work attempts to calculate the exclusive J/Psi production cross-section using a truncation of the JIMWLK equation and to measure this cross-section in the ATLAS experiment.

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