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Current status of the HEP phenomenology at InSTEC

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We report the activities of our group in the field of HEP phenomenology. In particular we will show our results on the production of ρ^0 , Φ , and J/ψ mesons and discuss some of its implications and its possibilities of extension to other more complex scenarios as can be the case of ultraperipheral proton-nucleus collisions at relativistic energies, the broadening of the transversal momentum (p_T) spectrum (the so called Cronin effect) with the focus on the nuclear modification factor taking into account the merging of the Matrix Elements (ME) approach calculated by the POWHEG in NLO with the Parton Shower (PS) as implemented in the PYTHIA event generator. Finally, we analyze the Z production in the collisions pPb and PbPb at 5.02 TeV with emphasis in the p_T distribution, considering an extension of the Glauber model and analyzing the initial vertex.

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