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Covariant (D)GLV energy loss in proton-lead collisions at the LHC

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With the assumption that QGP is produced, as well as that its evolution can be modeled by hydrodynamics, we calculate jet radiative energy loss in p+Pb interactions at LHC, using a frame-independent formulation of the (Djordjevic-)Gyulassy-Levai-Vitev approach. In A+A reactions we have shown that covariance matters because compared to the “vanilla” (D)GLV energy loss model it gives about 50% higher v_2 for pions, and also D and B mesons, due to an interplay between jet propagation direction and collective flow of the medium. I will now present results on the nuclear modification factor (R_{AA}) and harmonic flow (v_n) in p+Pb collisions at LHC energies. This is especially interesting because hydrodynamics requires high opacities which should then be visible in energy loss. I will discuss whether hydrodynamics in p+A reactions can be reconciled with (D)GLV energy loss and experiments, especially in view of measurements finding R_{AA} close to unity but with significant v_2 at modestly high p_T .

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