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The fragmentation region

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The very far forward, or “fragmentation”, region of heavy-ion collisions is critically understudied. The physics of this region is incredibly rich and may lead to insight into a variety of other problems. We present a simple model for understanding the hydrodynamics of the fragmentation region, arguing that a density of 2-3 times nuclear saturation density is reached. We also present a method for understanding bremsstrahlung in the fragmentation region, reconciling the non-perturbative, color-glass-condensate-governed nature of a highly boosted nucleus with the high- k_T physics of perturbative quantum field theory for the first time. These studies provide crucial initial conditions for the correct hydrodynamical modelling of the fragmentation region and give insight into high-density regions of the QCD phase diagram.

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