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Distribution of Nuclear Matter and Radiation in the Target Fragmentation Region

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Recent work by Kajantie, McLerran, and Paatelainen studies, in a completely classical setting, the gluon bremsstrahlung produced when a sheet of colored glass interacts with a color-charged point particle. Remarkably, the radiation spectrum thus calculated is in qualitative agreement with experiment. I will present here the results of our paper, where we extend these results to describe the target fragmentation region in nucleus-nucleus relativistic collisions. Assuming a constituent “quark” model of the target and classical dynamics, we calculate the subsequent evolution of baryons and the associated radiation. We confirm that the struck nucleus is compressed by a factor proportional to the saturation momentum of the projectile and that the dynamics of the early times of the collision are best described by two separate fluids as the produced radiation’s velocity distribution is very different to the velocity distribution of the matter in the struck nucleus.

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