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High p_T hadron production and its quantitative constraint to model parameters at PHENIX TAKAO SAKAGUCHI, Brookhaven National Laboratory, PHENIX COLLABORATION — Hot and dense matter created in relativistic heavy ion collisions is found to be opaque according to the fact that the yield of high p_T hadrons, which are considered to carry the major fraction of the momentum of hard scattered partons, is highly suppressed. The nuclear modification factors (R_{AA}) of π^0 from the latest PHENIX publication [Phys.Rev.Lett. **101**, 232301(2008)] are found to be consistent with linear increase as a function of p_T. These developments have stimulated the development of several theoretical models. By properly accounting for the statistical and various types of experimental, but not theoretical, systematic errors, the PHENIX experiment has recently succeeded in obtaining quantitative constraints on energy loss within the context of each model. There is a limitation on detecting high p_T π^0 because of merging γ's decaying from π^0, but we found that we can reach four times higher p_T when looking at η. We analyzed data from the RHIC Year-7 Au+Au run and obtained η p_T spectra and R_{AA} up to 21 GeV/c with a smaller systematic error compared to that of π^0. The result shows the similar trend in suppression as π^0. In this presentation, an attempt to constrain model parameters using the latest high p_T η spectra from PHENIX will be shown, and the characteristics of the matter produced obtained in the study will be discussed.

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