Forward nuclear modification factor in Au-Au and Cu-Cu collisions at $\sqrt{s} = 62.4$ GeV

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The high p_T particles ($p_{\mathrm{T}} > 2$ GeV/c) from 200 GeV Au-Au collisions are produced from initial hard scattered partons. The hard scattered partons probe the final stages of the created medium before the parton fragments. Studying high p_{T} particles can then give information on the final state effects of the created medium. Comparing binary collision nucleus-nucleus scaled particle yields to particle yields from p+p collisions, the nuclear modification factor, shows suppression of the high p_T particles, but no dependence on pseudorapidity. R_{CP}, binary collision scaled ratio of central to peripheral spectra, at the same energy does not either depend on the pseudorapidity. At midrapidity in 62.4 GeV Au-Au and Cu-Cu collisions, it has been shown that central collisions show no suppression or enhancement of the high p_{T} particles, while semi central collisions show Cronin enhancement [1]. At this lower energy, high p_{T} particle production can be studied in the fragmentation region. This could reveal interesting physics for models, such as the Color Glass Condensate and Recombination.
Collisions at 62.4 GeV can be used to span the data from SPS to RHIC. BRAHMS measured in June 2006, p+p collisions at $\sqrt{s} = 62.4$ GeV. Particles were measured from midrapidity out to the fragmentation region, a unique feature of BRAHMS. These results extends the baseline measurements for the exploration of medium effects in heavy ion collisions.
In the talk I will present nuclear modification factors at forward rapidity for Au-Au and Cu-Cu collisions using recent p+p collisions as reference data. If the high p_T suppression has any dependence on the system size, it should show a strong signal when comparing Au-Au to Cu-Cu. The high p_{T} suppression's dependence on pseudorapidity and system size will be presented in this talk.

References

[1] B. Alver et al, PHOBOS Collaboration, Phys. Rev. Lett. **96**, 212301 (2006)