

Abstract Submitted
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Constituent quarks and systematic errors in mid-rapidity charged multiplicity ($dN_{\text{ch}}/d\eta$ distributions)¹ MICHAEL TANNENBAUM, Physics Department, Brookhaven National Laboratory, Upton, NY 11973-5000 — Although it was demonstrated more than 13 years ago that the increase in midrapidity $dN_{\text{ch}}/d\eta$ with increasing centrality of Au+Au collisions at RHIC was linearly proportional to the number of constituent quark participants (or “wounded quarks”, Q_W) in the collision, it was only in the last few years that generating the spatial positions of the three quarks in a nucleon according to the Fourier transform of the measured electric charge form factor of the proton could be used to connect $dN_{\text{ch}}/d\eta/Q_W$ as a function of centrality in p(d)+A and A+A collisions with the same value of $dN_{\text{ch}}/d\eta/Q_W$ determined in p+p collisions. One calculation, which only compared its calculated $dN_{\text{ch}}/d\eta/Q_W$ in p+p at $\sqrt{s_{NN}} = 200$ GeV to the least central of 12 centrality bin measurements in Au+Au by PHENIX, claimed that the p+p value was higher by “about 30%” from the band of measurements vs. centrality. However the clearly quoted systematic errors were ignored for which a 1 standard deviation systematic shift would move all the 12 Au+Au data points to within 1.3 standard deviations of the p+p value, or if the statistical and systematic errors are added in quadrature a difference of $35 \pm 21\%$.

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