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**Centrality Dependence of Bulk Fireball Properties at RHIC** JOHANN RAFELSKI, University of Arizona, JEAN LETESSIER, LPTHE-Paris 7, GIORGIO TORRIERI, McGill University — We explore the centrality dependence of properties of the dense hadronic matter created in $\sqrt{s_{NN}} = \mathbf{200}$ GeV Au–Au collisions at RHIC. Using the statistical hadronization model we fit particle yields known for 11 PHENIX centrality bins and using STAR yields for $\boldsymbol{\phi}$ and $\boldsymbol{K^*}$. We present the resulting centrality dependence of model parameters $\boldsymbol{T, \mu_B, \mu_S, \gamma_s}$, the rapidity yields of physical quantities and the physical properties of bulk matter at hadronization. The most remarkable finding of this study is the recognition that the bulk properties $\boldsymbol{P}$ pressure, $\boldsymbol{\epsilon}$ energy density, $\boldsymbol{\sigma}$ of the hadronizing dense matter fireball created at RHIC do not depend on the size of the system for $\boldsymbol{A \geq 20}$, where $\boldsymbol{A}$ is the number of reaction participants. For most central collisions the strangeness per entropy yield $\boldsymbol{s/S = (2.9 \pm 0.3)10^{-3}}$ is more than 4 times enhanced compared to the AGS energy scale. For the most peripheral reactions this ratio is $\boldsymbol{s/S = (1.9 \pm 0.3)10^{-3}}$ which shows the influence of the fireball expansion dynamics on production of strangeness. We see this in the steady rise of strangeness occupancy $\boldsymbol{\gamma_s}$ with centrality. The baryon end entropy density per unit rapidity grows also with centrality and we find in most central 5% collisions $\boldsymbol{d(B - \overline{B})/dy = 14 \pm 2}$, the strangeness yield $\boldsymbol{ds/dy = 135 \pm 10}$ and the entropy yield $\boldsymbol{dS/dy = 4900 \pm 400}$.

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