expansion of the medium had a negligible effect on the total energy loss.

Since the partonic production spectrum observed at RHIC can be approximated by a power law, we use the momentum Jacobian ($p_T^f = (1-\epsilon)p_T^i$) as the survival probability of hard partons; see Appendix B. Following the factorization theorem and Glauber approach [366], we distribute partons in the overlap region according to $\rho_{\text{coll}} = T_{AA}$ and isotropically in azimuth; hence

$$R_{AA}(\phi;\, b) = \frac{\iint \mathrm{d}x\mathrm{d}y\;\, T_{AA}(x,\, y;\, b)\,(1-\epsilon(x,\, y,\, \phi;\, b))^n}{N_{\text{coll}}(b)}, \tag{3.5}$$

where $4 \lesssim n \lesssim 5$. The difference between $n = 4$ and $n = 5$ is less than 10%, and in this paper we will always use the former.

We evaluate $R_{AA}(\phi)$ at 24 values of ϕ from 0-2π and then find the Fourier modes R_{AA} and v_2 of this distribution. We label the results of this model in the plots as GREL for geometric radiative energy loss. A different method for finding v_2, not used here, assumes the final parton distribution is given exactly by R_{AA} and v_2, and then determines v_2 from the ratio of $R_{AA}(0)$ and $R_{AA}(\pi/2)$; this systematically enhances v_2, especially at large centralities.

Choosing $40-50\%$ centrality as a good representative, we calculate the line in (R_{AA}, p_T) space corresponding to $0 \leq \kappa < \infty$, Fig. 3.1. One sees in the figure that the curve does not cross the error ellipse for the relevant PHENIX π^0 data. This is despite the simplifying use of hard sphere geometry, where we took $R_{HS} = 6.78$ fm to ensure that $\langle r^2_{\perp,WS}\rangle = \langle r^2_{\perp,HS}\rangle$, that amplifies the v_2. Since the experimental errors are the most basic estimate—it would