dips to a minimum near $p_T \sim 10$ GeV; one must be cautious, though, as many of the assumptions in the elastic energy loss derivations break down for $p_T \not\gg M_Q$.

Future Rhic detector upgrades will allow for individual charm and bottom quark detection. Predictions for $R^c_{AA}(p_T)$ and $R^b_{AA}(p_T)$ at Rhic from Eq. (5.1) and pQCD are shown in Fig. 5.5. As seen in Fig. 5.4 the power law production index grows quickly at Rhic; we now expect the rapid increase in n_Q to overcome the (relatively in comparison) slow decrease in ϵ_{pQCD} so that, unlike at Lhc, $dR_{AA}/dp_T \not> 0$. In fact Fig. 5.5 shows that the full numerical results for R^Q_{AA} from pQCD and AdS/CFT drag *both* decrease with p_T. Nonetheless one may still examine the double ratio R^{cb}, Fig. 5.6. While the larger index makes the grouping less dramatic at Rhic one may still differentiate between pQCD and AdS/CFT drag. Due to its smaller multiplicities, the temperature of the medium at Rhic is smaller than will be seen at Lhc; hence the AdS/CFT drag "speed limit", Eq. (5.4), is higher at Rhic than Lhc.

5.4 Conclusions

Possible strong coupling alternatives to pQCD in nuclear collisions were studied based on a recent AdS/CFT model of charm and bottom energy loss. The predicted nuclear modification factors, R^Q_{AA}, were found to be decreasing as a function of p_T, as compared to increasing as predicted from pQCD. We showed that the momentum dependence differences in the individual R^Q_{AA} can