EXTRAPOLATION OF HADRON PRODUCTION MODELS TO ULTRA-HIGH ENERGY

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QCD-inspired models of high-energy hadron production can be used to predict,
among others, cross sections, mean production multiplicities and multiplicity
fluctuations. These quantities are closely related due to the QCD factoriza-
tion theorem and Abramovski-Gribov-Kancheli cutting rules. Focussing on the
SIBYLL interaction model, we discuss the importance of the low-$x$ extrapo-
lation of parton densities and different shadowing/saturation scenarios. Some
recent results from accelerator experiments are considered in the light of pos-
sible implications for high energy extensive air showers. Although most of the
results are calculated with the SIBYLL model, they apply in general to QCD-
inspired interaction models and predictions of other models are also shown.