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## Modeling Hadronic Multiparticle Production at Very High Energy

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After introducing the general structure of event generators used for simulating cosmic ray interactions we describe the underlying philosophy of the Monte Carlo models EPOS, QGSJET, SIBYLL, and DPMJET. Some of the important assumptions of the models are reviewed in detail and the prediction obtained with the models are discussed. The reliability of the predictions is one of the key questions for which the new LHC data give valuable input. The relation of model predictions to general air shower features will be presented and uncertainties estimated. Finally, the most important open questions will be listed and ways of addressing them outlined.

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