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## Quark-gluon plasma in cosmic ray experiments

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Possibilities of observation of new particles or states of matter in cosmic ray experiments at very high energies (above 10<sup>15</sup> eV) always gave rise to doubts, especially among accelerator physicists. Nevertheless, attempts of explanation of various unusual phenomena detected in cosmic rays periodically appear. The first of them was an explanation of the knee appearance due to hadron interaction model changes, which was done in the first paper about the knee observation. Then various theoretical models and ideas with explanations of unusual phenomena observed in very high energy cosmic ray experiments were discussed in many papers. Recent LHC results, especially those obtained in nucleus-nucleus interactions, allow one to hope that some of these ideas were not so erroneous. In this paper, a simple model of quark-gluon plasma production is considered. It allows explain practically all unusual events detected in cosmic ray experiments, and the appearance of the knee and the observed mass composition changes above the knee.

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