



## **Generation of elementary particles by thunderclouds**

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Based on experimental data obtained in an experiment studying correlations of the intensity of secondary cosmic rays with the electric field of the atmosphere and lightning events, we discuss a possible scenario of the involvement of cosmic rays into the dynamics of the thunderstorm atmosphere. It is demonstrated that the experimental data require some process of particle generation in the cloudy layer. The process of acceleration of runaway electrons with a feedback created by positrons accelerated in the same field in the opposite direction can serve as a mechanism in which the positive feedback results in the exponential increase of particle intensity inside a limited volume. Depending on the strength of electric field and its extension, this process can have quite different characteristics in time and space. However, it seems to be rather universal and applicable to many phenomena: from regulation of the maximum electric field in the atmosphere and ion production up to generation of gamma-ray bursts detected in satellite experiments.