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Self-similarity method in relativistic physics

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The basic ideas of the self-similarity method in relativistic physics are presented. The self-similarity method allows one to reduce the number of independent variables for description of complex phenomena of a particular class, self-similar solutions are found in an analytical form, the character of behavior of physical quantities does not change with the change of scales of independent variables that is compensated by self-similarity transformation of other dynamic variables.

A particular case of the self-similarity is the well known scaling behavior of the reaction cross sections. The specific features of the self-similarity method for description of particle production in relativistic nuclear collisions where the scaling approach fails are described. The collective effects in relativistic collisions are also discussed.

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