# On the generators of the New Perturbation Methods

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**Abstract**

The mathematical models for nature study problems are described by nonlinear, more often, by differential equations, solutions of which, as a rule, not represented by the compact analytical form. For this reason, Newton, Euler, Clairaut, Lagrange, Laplace, Poincaré and other scientists proposed to search for these solutions by means of iterative methods, that is, series, approximations and transformations. These methods were realised, first of all, in classical astronomy (celestial mechanics and astrometry). It should be emphasized, that the constructive theory, of nonlinear equations, based on iterative methods, dominates in the modern nonlinear analysis.

My reprint is based on these ideas and is concerned with one interpretation of the classical and modern perturbation theory for differential equations with small parameter.

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