

# Separation of variables in PDEs using nonlinear transformations: Applications to reaction-diffusion type equations\*

Andrei D. Polyanin<sup>a</sup>, Alexei I. Zhurov<sup>a</sup>,

<sup>a</sup>*Ishlinsky Institute for Problems in Mechanics, Russian Academy of Sciences,  
101 Vernadsky Avenue, bldg 1, 119526 Moscow, Russia*

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## Abstract

The paper describes a new approach for constructing exact solutions to nonlinear partial differential equations that employs separation of variables using special (nonlinear integral) transformations and the splitting principle. To illustrate its effectiveness, the method is applied to nonlinear reaction-diffusion type equations that involve variable coefficients and arbitrary functions. New exact functional separable solutions as well as generalized traveling wave solutions are obtained.

**Keywords:** functional separation of variables, generalized separation of variables, exact solutions, nonlinear PDEs, reaction-diffusion equations

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\* This article will be published in the journal *Applied Mathematics Letters*, 2020, Vol. 100, 106055.

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is valid till November 14, 2019.