

Camporesi, Roberto. 2016. A fresh look at linear ordinary differential equations with constant coefficients. Revisiting the impulsive response method using factorization. *Int. J. Math. Educ. Sci. Technol.* 47(1): 82-99.

See <https://www.tandfonline.com/doi/abs/10.1080/0020739X.2015.1057246> . Accessed 28 March 2023.

Summary: We present an approach to the impulsive response method for solving linear constant-coefficient ordinary differential equations of any order based on the factorization of the differential operator.

The approach is elementary, we only assume a basic knowledge of calculus and linear algebra. In particular, we avoid the use of distribution theory, as well as of the other more advanced approaches: Laplace transform, linear systems, the general theory of linear equations with variable coefficients and variation of parameters.

The approach presented here can be used in a first course on differential equations for science and engineering majors.

Keywords: ordinary differential equations, Green functions, instructional exposition