

[Schwabik, Štefan](#)

The Perron product integral and generalized linear differential equations. (English)

[Zbl 0724.26006](#)

[Čas. Pěstování Mat.](#) 115, No. 4, 368-404 (1990).

In the recent years, Jarník and Kurzweil have defined a Perron product integral which is the “product form” of Kurzweil’s approach to the Perron integral through Riemann sums. They have connected this product integral to the solvability of linear equations of the form $u' = A(t)u$. This definition is extended in the present paper to allow the study of generalized linear differential equations of the form

$$u(s) = u(a) + \int_a^s d[A(r)]u(r), \quad s \in [a, b],$$

where A has bounded variation on $[a, b]$. In particular, under some additional assumptions upon the matrix A , a product integral representation of the corresponding fundamental matrix is given.

Reviewer: [J.Mawhin \(Louvain-La-Neuve\)](#)

MSC:

[26A39](#) Denjoy and Perron integrals, other special integrals

[34A12](#) Initial value problems, existence, uniqueness, continuous dependence and continuation of solutions to ordinary differential equations

Cited in **1** Review
Cited in **6** Documents

Keywords:

[Perron product integral](#); [Kurzweil’s approach to the Perron integral through Riemann sums](#); [generalized linear differential equations](#)

Full Text: [EuDML](#)