Kurzweil, J.; **Jarník, J.**

Generalized multidimensional Perron integral involving a new regularity condition. (English)

Zbl 0782.26003
Result. Math. 23, No. 3-4, 363-373 (1993).

The Riemannian definitions of generalized multidimensional Perron integral introduced in the last twelve years make use of various types of regularity concepts for the partial intervals involved in the Riemann sums. The aim of this paper is to generalize the definition of the α-regular integral introduced earlier by the same authors by replacing the constant α by some function ρ, and to study the dependence of the integrals with respect to ρ. En passant, the authors answer a question posed by Pfeffer at the 15th Summer Symposium in Real Analysis at Smolenice in 1991.

Reviewer: J.Mawhin (Louvain-La-Neuve)

MSC:

26B15 Integration of real functions of several variables: length, area, volume

Keywords:

generalized Riemann integral; generalized multidimensional Perron integral; regularity

Full Text: DOI

References:

[1] J. Kurzweil, J. Jarník: Differentiability and integrability in n dimensions with respect to {\(\alpha\)}-regular intervals. Resultate der Mathematik 21 (1992), 138–151 · Zbl 0764.28005 · doi:10.1007/BF03323075

[2] J. Mawhin: Generalized Riemann integrals and the divergence theorem for differentiale vector fields. In: E. B. Christoffel, Birkhäuser Verlag, Basel, 1981, 704–714

[3] J. Mawhin: Generalized multiple Perron integrals and the Green-Goursat theorem for differentiable vector fields. Czechoslovak Math. J. 31(106) (1981), 614–632 · Zbl 0562.26004

[4] J. Jarnik, J. Kurzweil, Š. Schwabik: On Mawhin's approach to multiple nonabsolutely convergent integral. Časopis pěst. mat. 108 (1983), 356–380

[5] W. F. Pfeffer: The divergence theorem. Transactions AMS 295 (1986), No. 2, 665–685 · Zbl 0596.26007 · doi:10.1090/S0002-9947-1986-0833702-0

[6] J. Kurzweil, J. Jarník: Equiintegrability and controlled convergence of Perron-type integrable functions. Real Anal. Exchange 17 (1991–92), No. 1, 110–139

[7] T. S. Chew: On the equivalence of Henstock-Kurzweil and restricted Denjoy integrals in Rn. Real Anal. Exchange 15 (1989-90), No. 1, 259–268

[8] J. Kurzweil, J. Jarník: Equivalent definitions of regular generalized Perron integral. Czechoslovak Math. J. 42 (117) (1992), in print