ICM 1998, Berlin, Aug. 18–27

Abstracts of Short Communications and Posters

Section:

8. Analysis

1991 MS Classification: 26, 28, 58

Dudley, Richard, Mass. Inst. of Tech., Cambridge, MA, USA; Norvaiša, Rimas, Inst. of Math. and Informatics, Vilnius, Lithuania

Differentiability of six nonlinear operators on nonsmooth functions

The six operators considered are composition, convolution, multiplication, and integration $(F, G) \mapsto \int F\,dG$ on pairs of functions, and on single functions, the definite or indefinite product integral, and the map $F \mapsto F^{-1}$ where $F^{-1}(y) = \inf\{x : F(x) \geq y\}$. The operators have been shown to be Fréchet differentiable with respect to some p-variation norms with remainder bounds of optimal order. Integrals are as defined by W. H. and L. C. Young. The product integral is holomorphic for $1 \leq p < 2$, where 2 is sharp.

Reference: R. M. Dudley, The order of the remainder in derivatives of composition and inverse operators for p-variation norms, *Ann. Statist.* **22** (1994), 1-20.