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Continuity and differentiability properties of the Nemitskii operator in Hölder spaces. (English) [Zbl 0637.47035](#)

Glasg. Math. J. 30, No. 1, 59-65 (1988).

Given a bounded domain Ω in \mathbb{R}^n , the author gives (sufficient) conditions for a real function f on $\bar{\Omega} \times \mathbb{R}$ under which the nonlinear superposition operator $Fu(x) = f(x, u(x))$ acts in the Hölder space $C^\alpha(\bar{\Omega}, \mathbb{R})$ and is continuous, locally Lipschitz, or continuously differentiable. In the last section, these results are generalized to vector valued functions, including an application to nonlinear elliptic boundary value problems.

Reviewer: [J.Appell](#)

MSC:

- [47J05](#) Equations involving nonlinear operators (general)
- [46G05](#) Derivatives of functions in infinite-dimensional spaces
- [47H99](#) Nonlinear operators and their properties
- [46E40](#) Spaces of vector- and operator-valued functions
- [35J65](#) Nonlinear boundary value problems for linear elliptic equations
- [26A16](#) Lipschitz (Hölder) classes

Cited in **1** Review
Cited in **3** Documents

Keywords:

Nemitskij operator in Hölder spaces; nonlinear superposition operator; locally Lipschitz; continuously differentiable; vector valued functions; nonlinear elliptic boundary value problems

Full Text: [DOI](#)

References:

- [1] Elworthy, Proc. Symp. Pure Mathematics 18 (1970)
- [2] Valent, Rend. Sent. Mat. Univ. Padova 74 pp 63– (1985)
- [3] Berger, Nonlinearity and functional analysis (1977) · [Zbl 0368.47001](#)

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