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C^1-smoothness of Nemytskii operators on Sobolev-type spaces of periodic functions

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Abstract: We consider a class of Nemytskii superposition operators that covers the nonlinear part of traveling wave models from laser dynamics, population dynamics, and chemical kinetics. Our main result is the C^1-continuity property of these operators over Sobolev-type spaces of periodic functions.

Keywords: Nemytskii operators, Sobolev-type spaces of periodic functions, C^1-smoothness
AMS Subject Classification: 47H99, 46E30

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