Remarks on superlinear operators.


The authors consider the concepts of superlinear operators and positive superlinear operators (introduced by E. M. Nikishin in connection with the theory of Fourier series) in a vector lattice setting. Let $E, F$ be a vector space and a vector lattice, respectively. A mapping $T: E \to F$ is said to be superlinear if for every $e \in E$ there exists $L_e \in \mathcal{L}(E, F)$ such that $L_e e = Te$ and $|L_e| \leq |T|$. If $E$ is also a vector lattice and for every $e \in E$ there exists $L_e \in \mathcal{L}_+(E, F)$ with $L_e e = Te$ and $|L_e| \leq |T|$, then $T$ is said to be positive superlinear. This paper presents equivalent formulations to the concept of a superlinear operator under the assumption that $F$ is order complete. Also, the authors show that positive superlinear operators between locally convex topological vector lattices are very rarely continuous unless they are linear.

Reviewed by Rosalind Reichard

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