

SIMPLICIAL LUSTERNIK–SCHNIRELMANN CATEGORY

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Abstract: The simplicial LS-category of a finite abstract simplicial complex is a new invariant of the strong homotopy type, defined in purely combinatorial terms. We prove that it generalizes to arbitrary simplicial complexes the well known notion of arboricity of a graph, and that it allows to develop many notions and results of algebraic topology which are customary in the classical theory of Lusternik–Schnirelmann category. Also we compare the simplicial category of a complex with the LS-category of its geometric realization and we discuss the simplicial analogue of the Whitehead formulation of the LS-category.

2010 Mathematics Subject Classification: 55U10, 55M30, 06F30.

Key words: Lusternik–Schnirelmann category, strong homotopy type, geometric realization, Whitehead formulation of category, graph arboricity.