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„Spaces: Manifolds and Complexes in All Dimensions“

Abstract

Spaces: Manifolds and Complexes in All Dimensions

Topology studies spaces, where the notion of a "space" is understood in a very broad sense. Two spaces are considered equivalent if one can be continuously deformed into the other.

Manifolds constitute a special class of spaces: they are spaces in which every point has a neighborhood that is homeomorphic to an (n)-dimensional ball. More general spaces are known as complexes, where several cells may meet along a common boundary cell.

In this lecture, we provide examples of manifolds and complexes. We will try to imagine spaces which do not fit into 3-space. We also present important results and an historical overview on the classification of manifolds and complexes and we introduce the Whitehead-Conjecture on the asphericity of 2-complexes.

SHORT CV

Stephan Rosebrock is Professor of Mathematics and Mathematics Education at the University of Education in Karlsruhe. He earned his PhD in Pure Mathematics from the University of Frankfurt. His habilitation, completed in Karlsruhe, focused on questions concerning the asphericity of 2-complexes.

His research interests lie in topology, with a particular emphasis on low-dimensional homotopy theory and combinatorial group theory, as well as in the promotion and support of mathematically gifted students. He has authored and co-authored numerous publications and several books in the fields of pure mathematics and mathematics education, particularly on mathematical enrichment and talent development. He is also actively engaged in organizing

and leading mathematics academies for gifted and talented students, fostering their mathematical development and interest in the subject.