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Computational Algebraic Topology and Its Applications

Ainhoa Berciano, Daniel Díaz Pernil and
Eduardo Sáenz-de-Cabezón (guest eds.)

Preface

Algebraic Topology is an area of pure mathematics with deep algebraic and geometrical-topological roots that has had an intense development in the last two centuries. The recent years have made evident the enormous potential for applications of Algebraic Topology. The powerful tools, techniques and ideas of this area have been used in various contexts related to data analysis, combinatorics, computer science, robotics, physics, computer vision or dynamical systems, to name just a few. On the other hand, the advances of computer science, in particular symbolic computation and manipulation, have increased the computability of the objects of algebraic topology and have made them actually applicable to real life problems.

It is the aim of this special issue to show some actual applications of algebraic topology as well as the computational techniques and problems related to algorithmic algebraic topology. In particular, five different papers are presented, where computational algebraic topology tools are applied in different research areas like Image Processing, Spaning Forests and Membrane Computing, Geometrical Modeling, Medical Imaging, Visibility in Computer Graphics,...

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Ainhoa Berciano, Daniel Díaz-Pernil and Eduardo Sáenz-de-Cabezón
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Guest Editors

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Table of Contents