Preface

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Abstract

The main mathematical disciplines that have been used in computer science are discrete mathematics (especially, graph theory and ordered structures), logics (mostly proof theory for all kinds of logics, classical, intuitionistic, modal etc.) and category theory (cartesian closed categories, topoi etc.). General Topology has also been used for instance in denotational semantics, with relations to ordered structures in particular. Recently, ideas and notions from mainstream "geometric" topology and algebraic topology have entered the scene in Concurrency Theory and Distributed Systems Theory (some of them based on older ideas). They have been applied in particular to problems dealing with coordination of multi-processor and distributed systems. Among those are techniques borrowed from algebraic and geometric topology: Simplicial techniques have led to new theoretical bounds for coordination problems. Higher dimensional automata have been modelled as cubical complexes with a partial order reflecting the time flows, and their homotopy properties allow to reason about a system's global behaviour. The first workshop on the subject "Geometric and Topological Methods in Concurrency Theory" has been held in Aalborg, Denmark, in June 1999. GETCO 2000 was organised as a workshop affiliated with CONCUR 2000 at Penn State University. The recent volumes 10 of Math. Struct. in Comp. Science and 39, issue 2, of Electr. Notes Theor. Comp. Science have been devoted to this area. The 3rd workshop in this series has been organised as a satellite to CONCUR 2001 at Aalborg University (Aug.21 – Aug.24). It brought together researchers from both the mathematical (geometry, topology, algebraic topology etc.) and computer scientific side (concurrency theorists, semanticians, researchers in distributed systems etc.) with an active interest in these or related developments. A follow up workshop in a very informal style has been held at the Department of Mathematical Sciences, Aalborg University, on August 27-28. I also thank the participants of this workshop which allowed us to carry on some of the discussions which began during GETCO, and in particular Ulrich Fahrenberg (Aalborg University, Denmark), Lisbeth Fajstrup (Aalborg University, Denmark), Martin Raussen (Aalborg University, Denmark), Philippe Gaucher (IRMA, Strasbourg, France), Nigel Walker (British Telecom, UK) and Francesco Zappa Nardelli (ENS, France). Last but not least, I wish to thank the referees, the authors and the programme committee members for their very precise and timely job. Many thanks are also due to Michael Mislove who kindly supported the workshop by letting us submit the papers through the Electronic Notes in Theoretical Computer Science. Finally, I wish to thank the Concur organizers, Anna Ingolfsottir, Luca Aceto and Arne Skou, the Concur programme committee and in particular Kim G. Larsen and Mogens Nielsen, and the Workshop coordinator, Hans Hüttel, for helping us out.