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Algebraic Structures in Low-Dimensional Topology

Organised by
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Abstract. The workshop concentrated on important and interrelated invariants in low dimensional topology. This work involved virtual knot theory, knot theory, three and four dimensional manifolds and their properties.

Keywords. geometric topology, knot theory, virtual knot theory, invariants, parity, graph links, free knots, knot cobordism, virtual knot cobordism, groups, fundamental groups, braids, representations of groups, skein theory, knot polynomials, quandles, skein modules, quandle cohomology, distributive cohomology, manifolds, surgery.

Mathematics Subject Classification (2010): 57M25.

Introduction by the Organisers

The workshop "Algebraic Structures in Low-Dimensional Topology" organized by Louis Kauffman, Vassily Manturov, Kent Orr and Robert Schneidermann was well attended, with over 25 participants from an international commmunity of researchers. Talks were given on a wide variety of topics, including both three and four dimensional geometric topology, knot theory and virtual knot theory. The subject areas of this conference included specifically algebraic and combinatorial approaches to invariants sucn as parity in the theory of graph links, free knots and virtual knot theory, uses of surfaces and curves on surfaces to understand virtual knot cobordism and to understand relationships between classical and virtual knots, orderability in groups and fundamental groups, new approaches to the Alexander polynomial, braids and representations of braid groups, relationships of

representation theory with the skein theory of knot polynomials, structure of quandles, structure of skein modules, and extensions of ideas in quandle cohomology to distributive cohomology. Along with these combinatorial and algebraic ideas there was much discussion of geometric/topological techniques such as branched coverings, structures on manifolds, cobordisms, surgery and dymnamics of surgery, and even relationships between Fourier series and representations of braids. There are many challenging problems in low dimensional topology, and a remarkable number of fertile ideas and methods. This conference was an excellent meeting place for the participants to work and share their ideas.

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Workshop: Algebraic Structures in Low-Dimensional Topology

Table of Contents