Mathematisches Forschungsinstitut Oberwolfach

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Graph Theory

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Abstract. This is the report on an Oberwolfach conference on graph theory, held 16-22 January 2005. There were three main components to the event: 5-minute presentations, lectures, and workshops. All participants were asked to give a 5-minute presentation of their interests on the first day, and subsequent days were divided into lectures and workshops. The latter ranged over many different topics, but the main three topics were: infinite graphs, topological methods and their use to prove theorems in graph theory, and Rota's conjecture for matroids.

Mathematics Subject Classification (2000): 05Cxx.

Introduction by the Organisers

This conference was one of a series of Oberwolfach conferences, held every two years or so, with focus on graph structure, decomposition, and representation. There were 49 participants, including over a dozen graduate students and postdocs.

At the request of the Oberwolfach Director, the conference schedule was designed to promote informal collaboration. In particular, there were fewer formal talks than usual, and instead there were a number of discussion groups or "workshops". Also, the first day (except for one plenary talk) was devoted to having the participants introduce themselves – we asked all participants to give a five-minute presentation of their current interests.

We were fortunate in that several of the plenary talks described major new results. For instance, Ron Aharoni and Eli Berger have just solved the Erdős-Menger conjecture; Bertrand Guenin has proved a major extension of the four-colour theorem; and Stephan Brandt and Stéphan Thomassé have settled a long-standing question about the chromatic number of dense graphs.

But probably the most distinctive feature of the meeting were the workshops. Some of these were planned before the conference, and others were held spontaneously. They were each on a topic with a chairman, but made as informal as possible. Some were more or less a sequence of talks on the topic, some were monologues, and some were genuine discussions. There were several different topics: infinite graphs and Ramsey theory, matroid theory, connectivity, graph minors and width, and topological methods. Three topics in particular gave rise to particularly active and long-running workshops: the proof of the Erdős-Menger conjecture, the prospects of extending the graph minors project to matroids, and the use of topological methods for combinatorial problems.

Our thanks to the organizers of the workshops for making them run successfully, to the Director for encouraging us to try out new ways of informal collaboration, and to all the participants for making this a highly stimulating meeting.