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Sommario/riassunto

Networks play a central role in today's society, since many sectors employing information technology, such as communication, mobility, and transport - even social interactions and political activities - are based on and rely on networks. In these times of globalization and the current global financial crisis with its complex and nearly incomprehensible entanglements of various structures and its huge effect on seemingly unrelated institutions and organizations, the need to understand large networks, their complex structures, and the processes governing them is becoming more and more important. This state-of-the-art survey reports on the progress made in selected areas of this important and growing field, thus helping to analyze existing large and complex networks and to design new and more efficient algorithms for solving various problems on these networks since many of them have become so large and complex that classical algorithms are not sufficient anymore. This volume emerged from a research program funded by the German Research Foundation (DFG) consisting of projects focusing on the design of new discrete algorithms for large and complex networks. The 18 papers included in the volume present the results of projects realized within the program and survey related work. They have been grouped into four parts: network algorithms, traffic networks, communication networks, and network analysis and simulation.
