Preface

The First Summer School on Theoretical Aspects on Computer Science was held at the Institute for Studies in Theoretical Physics and Mathematics (IPM) from July 3-10, 2000.

The idea of organizing a summer school was originated during a conversation between the first and the second editor of this volume in the winter of 2000 at IPM in Tehran. The decision was formalized when the third editor visited IPM later in the winter.

The main idea behind the Summer School was to introduce to the students in Iran some of the highly innovative and promising research in Theoretical Computer Science, and, at the same time, to start a flow of ideas between top researchers in the field and the Iranian scientists. For this reason, the talks were designed to be of a tutorial style.

The organizers decided to concentrate on a few important areas of research in modern Theoretical Computer Science. To attract students to this important area, they also decided to include talks on applications of methods from Theoretical Computer Science to other areas.

This volume contains the written contributions to the program of this Summer School. It is intended for students and researchers who want to gain acquaintance with certain topics in Theoretical Computer Science. The papers on quantum computation, approximation algorithms, self-testing/correcting, algebraic modeling of data, and the Regularity Lemma correspond to the former category, while connections between multiple access communication and combinatorial designs, graph-theoretical methods in computer vision, and low-density parity-check codes belong to the latter category.

Each contribution to this volume was presented in a two hour session, leaving ample time for questions and discussions. The tutorials were followed by a number of specialized talks touching on current research problems in the area. Parts of the talks have been incorporated into the material of the contributions.

January 2002   G.B. Khosrovshahi
                                                                A. Shokoufandeh
                                                                A. Shokrollahi