

Preface

At various times, the *IBM Journal of Research and Development* has presented special issues on the work of the Mathematical Sciences Department at the IBM Thomas J. Watson Research Center. Most recently, it published in 1987 the proceedings of a symposium celebrating the Department's 25th anniversary. The papers presented in this issue are our response to the editor's kind invitation to present samples of our current work.

The vitality of the Mathematical Sciences Department depends on a lively interaction with people in science, engineering, and business who use mathematics to solve their problems, and with the world community of mathematicians who are engaged in cooperatively advancing mathematical knowledge. The Department's position as part of the IBM Thomas J. Watson Research Center confers special responsibilities and opportunities. We are in a unique position to have our mathematical work influenced by what we learn from interacting with the world of business and product development, while at the same time benefitting IBM and its customers by the application of our mathematical knowledge and expertise. The papers in this special issue reflect the spectrum of our activities, ranging from exploiting special features of IBM computers and improving algorithmic performance, to solving problems intrinsic to mathematics.

No collection of eight papers can do justice to the wide variety of activities of the Department. While the papers in this special issue are a representative sample of what we do, we hope that other parts of our work will be exposed to the readers of this journal in issues to come.

Shmuel Winograd
Director of Mathematical Sciences

Alan Hoffman
Guest Editor

IBM Thomas J. Watson Research Center