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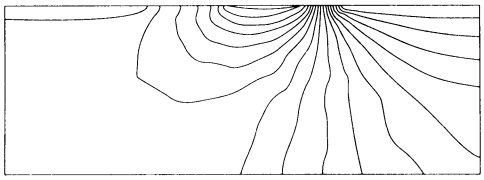

Computational Aspects of VLSI Design with an Emphasis on Semiconductor Device Simulation

Randolph E. Bank, Editor

(Lectures in Applied Mathematics, Volume 25)

Numerical simulation is rapidly becoming an important part of the VLSI design process, allowing the engineer to test, evaluate, and optimize various aspects of chip design without resorting to the costly and time-consuming process of fabricating prototypes. This procedure not only accelerates the design process, but also improves the end product, since it is economically feasible to numerically simulate many more options than might otherwise be considered. With the enhanced computing power of today's computers, more sophisticated models are now being developed.

This volume contains the proceedings of the AMS-SIAM Summer Seminar on Computational Aspects of VLSI Design, held at the Institute for Mathematics and Its Applications at the University of Minnesota, in the spring of 1987. The seminar featured presentations by some of the top experts working in this area. Their contributions to this volume form an excellent overview of the mathematical and computational problems arising in this area.

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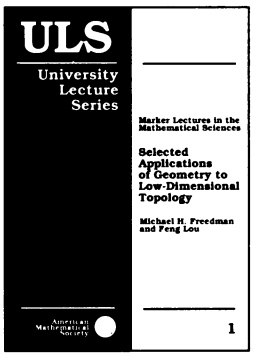
Selected Applications of Geometry to Low-Dimensional Topology

Michael H. Freedman and Feng Luo

(University Lecture Series, Volume 1)

This book, the inaugural volume in the new University Lecture Series, is based on lectures presented at Pennsylvania State University in February 1987. The Lectures attempt to give a taste of the accomplishments of manifold topology over the last 30 years. By the late 1950s, algebra and topology had produced a successful and beautiful fusion. Geometric methods and insight, now vitally important in topology, encompass analytic objects such as instantons and minimal surfaces, as well as nondifferentiable constructions.

Keeping technical details to a minimum, the authors lead the reader on a fascinating exploration of several developments in geometric topology. They begin with the notions of manifold and smooth structures and the Gauss-Bonnet theorem,



and proceed to the topology and geometry of foliated 3-manifolds. They also explain, in terms of general position, why four-dimensional space has special attributes, and they examine the insight Donaldson theory brings. The book ends with a chapter on exotic structures on R^4, with a discussion of the two competing theories of four-dimensional manifolds, one topological and one smooth.

Background material was added to clarify the discussions in the lectures, and references for more detailed study are included. Suitable for graduate students and researchers in mathematics and the physical sciences, the book requires only background in undergraduate mathematics. It should prove valuable for those wishing a not-too-technical introduction to this vital area of current research.

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