Preface

This is a volume of papers in honor and celebration of the life and contributions to mathematics of Shiing-Shen Chern. The works included cover a very wide spectrum of mathematical areas, all of which have some relation to geometry. As such they represent the breadth and lasting influence of Chern's mathematical career, both in his published works and his personal interactions with colleagues. The contributions that follow are from established leaders in the field as well as from younger mathematicians working in areas deeply influenced by Chern. The latter exemplify Chern's lifelong interest in and support of the emerging generation of mathematicians. Also included are a number of works by mathematicians in China, reflecting Chern's return to his homeland and his profound influence on the development of mathematics in that country.

One of the characteristics of Chern's mathematical life was that in addition to producing pioneering works that opened up whole new areas of mathematics, he revisited several classical topics in geometry that had attracted his attention as a young mathematician. Web geometry was the subject of Chern's thesis, written under Blaschke in Hamburg, Germany. He returned to the subject in the late 1970's, and there has been a resurgence of interest in the field among younger mathematicians. Three of the contributions to the present volume are in this area. The paper on Finsler geometry reflects similarly a field to which Chern returned in his later years.

The several papers on the relation between PDEs and geometry exemplify Chern's long interest in this subject. Through his own work and that of his students, especially S. T. Yau, this has become one of the major areas of contemporary mathematics. As noted in the accompanying essay, Chern had a lifelong interest in complex geometry, and this is also reflected in papers in this volume. Finally, although Chern did not work directly in the fields of algebraic geometry and arithmetic algebraic geometry, his research profoundly influenced these fields; the ubiquitous role played by Chern classes and secondary differential invariants, and the

geometric consequences of differential constraints, are addressed in some of the contributions herein.

I would like to express my personal appreciation to all who have contributed to this volume in memory of S. S. Chern. Hongjun Li deserves special mention for her excellent assistance in the preparation of this collection.

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September, 2006