

Algebra and Geometry

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*Proceedings of the International Conference of
Algebra and Geometry held at National Taiwan
University, December 1995*

edited by Ming-Chang Kang



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Algebra and Geometry: Proceedings of the International Conference of Algebra and Geometry held at National Taiwan University, December 1995

Editor: Ming-Chang Kang, National Taiwan University

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Preface

This volume is an outgrowth of the International Conference of Algebra and Geometry, held at the National Taiwan University, December 26–30, 1995. It brought together recognized specialists in mathematical physics, algebraic geometry, differential geometry, algebra and number theory, etc. Besides the mathematicians in Taiwan, we were pleased to host participants from China, Hong Kong, Japan, Singapore and USA in the conference.

There were twenty-four invited speakers in total. Among them, the following gave two lectures each: C. L. Chai, K. Fukaya, V. Kac, W. C. Winnie Li, T. T. Moh, N. Mok, M. P. Muthy, S. T. Yau and Stephen S. T. Yau. Except for Professor Swan's article, the papers appearing in this volume are based on lectures of invited talks. It is highly appreciated that Prof. Swan agreed to publish his paper in this Proceedings although he didn't attend this conference. We regret that some of the invited speakers were unable to submit their papers before the publication of this volume. In addition to invited talks, twenty contributed talks were presented also. I would like to use this opportunity to thank all speakers for their efforts. Finally, I gratefully acknowledge financial support for the academic program from National Taiwan University and the National Science Council of Rep. of China.

Ming-chang Kang
Department of Mathematics
National Taiwan University
Taipei, Taiwan
February 27, 1996

List of Invited Talks

Ching-Li Chai (University of Pennsylvania)
Linearity Properties and Hecke Orbits of Shimura Varieties

S. Y. Alice Chang (UCLA)
Extremal Functions of Sobolov Inequalities

Jih-Hsin Cheng (Academia Sinica, Taipei)
Geometry of Cauchy-Riemann Manifolds in Dimension Three

Kai-Seng Chou (Chinese University of Hong Kong)
On an Anisotropic Flow for Plane Curves

Minking Eie (Chung Cheng University)
Cohomology Group Associated with Jacobi Cusp Forms over Cayley Numbers

Kenji Fukaya (Kyoto University)
Mathematical Theory of Open Topological String

Victor Kac (MIT)
W-Algebras and Quantum Hall Effects

Delang Li (Sichuan United University)
On Iwasawa Invariants

Ke-Zheng Li (China University of Science and Technology, Beijing)
Class Numbers of Quaternion Hermitian Forms and Moduli Spaces

W. C. Winnie Li (Pennsylvania State University)
Ramanujan Graphs

C. S. Lin (Chung Cheng University)
Estimates of the Conformal Scalar Curvature Equation via the Method of Moving Planes

Hongwen Lu (Tongji University)
The Genus of Some Hilbert Modular Surfaces

Tzuong-Tsieng Moh (Purdue University)
Jacobian Conjecture

Ngaiming Mok (Hong Kong University)
Rigidity of Grassmannians under Kähler Deformations

M. Pavaman Murthy (University of Chicago)
Obstruction to Splitting of Projective Modules

Shi-shyr Roan (Academia Sinica, Taipei)
Mirror Symmetry of Elliptic Curves and Ising Model

I-Hsun Tsai (National Taiwan University)
Dominating the Varieties of General Type

Jyh-Yang Wu (Chung Cheng University)
Hausdorff Convergence, Fundamental Groups and Spectral Geometry

Fei Xu (Chian University of Science and Technology, Hefei)
“Euler System” in Global Function Fields

Paul C. Yang (University of Southern California)
A Fourth Order Invariant in Conformal Geometry

Shing-Tung Yau (Harvard University)
Mirror Symmetries

Stephen S.-T. Yau (University of Illinois at Chicago)
Complement of Arrangements of Hyperplanes in $\mathbb{C}P^n$

Jing Yu (Academia Sinica, Taipei)
On Transcendence over Function Fields

Chunlai Zhao (Beijing University)
A Criterion for Elliptic Curves with Lowest 2-Power in $L(1)$

List of Contributed Talks

Shou Te Chang (Chung Cheng University)
Betti Numbers of Modules of Exponent Two over Regular Local Rings

Shu-Cheng Chang (Tsing Hua University)
The Calabi Flow on Compact Kähler-Einstein Surfaces

Roger Chen (Singapore National University)
On Poincaré Type Inequalities

Shun-Jen Cheng (Cehng Kung University)
On Free Field Realizations of Superconformal Algebras

Huah Chu (national Taiwan University)
The Invariants of Classical Groups in Positive Characteristics

Meng-Kiat Chuah (Chiao Tung University)
Kähler Structure on $K_c/(P, P)$

Kwai-Man Fan (Chung Cheng University)
Direct Product Decomposition of the Fundamental Group of the Complement of a Union of Lines

Liang-Chung Hsia (Taiwan Normal University)
On Artin's Conjecture for the Carlitz Module

Shou-Jen Hu (Tamkang University)
Some Examples of Rings of Invariants

I-Chiau Huang (Academica Sinica, Taipei)
Local Cohomology Interpretations of Combinatorial Identities

Tayuan Huang (Chiao-Tung University)
Alternating Bilinear Forms and Their Associated Geometries

Yu-Ching Hung (Taiwan Normal University)
On the Hilbert-Kunz Function

Isaac Chaujun Lee (Sun Yat-Sen University)
Projectively Flat Affine Surfaces with Flat Affine Metric

Ming-Guang Leu (National Central University)
On the Series for $L(1, \chi)$

Hua-Chieh Li (Tsing Hua University)
Dynamical Conjugates Between Endomorphisms of Formal Groups

Ping-Zen Ong (National Taiwan University)
Higher Degree Vassiliev Invariants

Yuan-Yuan Shen (Tunghai University)
The “Simplest” 2^n -tic Fields

Chiung-Jue Sung (Chung Cheng University)
Spectral Gap Estimates on Compact Manifolds

Hsin-Ju Wang (Chung Cheng University)
On the Relation-Type Conjecture

Shihshu Walter Wei (University of Oklahoma)
 p -Harmonic Maps with Some Applications to Geometry, Topology, and Analysis

Derchyi Wu (Academia Sinica, Taipei)
A Non-Uniqueness Theorem for Harmonic Maps

Xiaoping Xu (Hong Kong University of Science and Technology)
Is a Vertex Operator Algebra a Nice Guy?

Yung Yu (Cheng Kung University)

The Invariant Polynomials and Relation of Group of Order 51840 of $SL(4, \mathbb{C})$