

数理解析研究所講究録 1060

Number Theory and its Applications

— 数論とその応用

京都大学数理解析研究所

1998年8月

Preface

This is the proceedings of a conference held in RIMS during Nov.10-Nov.14, 1997, and contains most of the contents of talks, i.e. those which arrived in time. The participants from foreign countries include Professors S. Adhikari, K. Alladi, B. Berndt, J. Bruedrn, V. Bernik, H. H. Chan, K.Gyory, A. Laurinchikas, and A. Schinzel.

We would like to dedicate this proceedings to Prof. A. Schinzel on the occasion of his 60th birthday, whose profound knowledge in all respects of number theory enabled to unify the diverse contents to interact effectively. I forgot to ask the contributors for permission of doing so, but I am sure all will agree.

The title of the conference was "Number theory and its applications" as a substitute for "Comprehensive studies on number theory" as promised in the preface to the proceedings of 1992 conference (published as Vol. 837 of the RIMS Kokyuroku Ser.). The atmosphere being amicable and pleasant, aiming at "delightful mathematics and enjoyable mathematics", the topics of the talks were of diversity, reflecting the concept of the conference as well as the spirits of Ramanujan, i.e. as a special feature, presentation with many concrete examples—*Things done without example, in their issue are to be feared* (Henry VIII, 2:1, citation by S. Ulam, *The Scottish Book*, Birkhauser 1987). A Japanese version would be "Tokini hanrei nakinishimoarazu—Sometimes Hanrei has not been completely down, or in another context, Sometimes there are counterexamples."

Indeed, in the art of counting, one looks for the missing piece, and when one feels that one finds one, one would fancy the scene: "I think you are the one I have been waiting for," said the missing piece. "Maybe I am your missing piece". "But I am not missing a piece," said the Big O. "There is no place you would fit." —from Shel Silverstein, "The missing piece meets the Big O", Harper & Collins, 1981.

It so happned that two of the main speakers, Professors Alladi and Berndt were editors in chief of the new periodical "The Ramanujan Journal." According to the kind suggestion of Professor Alladi, I and Professor Gyory are now preparing another volume of the proceedings which contains papers contributed not only by speakers but also by participants—incidentally, the number of participants was 108, coninciding with the number of desires that one is thought to have in Buddhism—that's the reason why at each temple, they ring the bells 108 times toward the end of each year to toll out those desires.

All the participants will receive inofrmation on the coming another volume

of the proceedings within this year.

The title suggests those of the possible coming conferences, namely, synthetic studies, or fusion of, number theory, and we hope these will be realized in the near future.

In this conference there were a number of younger colleagues from South-East Asia as well as from inside of Japan for whom I wish their successful career as mathematicians, and we wish to encourage them to contribute those intended proceedings.

I was supported in organizing the conference by many of my good friends, to whom I would like to express my sincere thanks. Special thanks are due to Prof. Y. Ihara for making the conference realizable. Thanks are also due to Professor I. Shiokawa for inviting Professor Schinzel, to Professor Matsumoto for inviting Professors Bruedern and Laurinchikas, to Professor Hirata for inviting Professor Bernik, and to Professor Nakahara for inviting Professor Gyory.

During the conference Professor Schinzel's presence was so remarkable that we felt it really like a number theory conference, and I was lost in the following reverie.

Młodszy profesor mowil do starszego profesora przy okazji jego 60tych urodzin, "Bylbym bardzo szczeniwy jesli moglbym zobaczyc Pana Profesora kiedy Pan bedzie mial 100 lat." A starszy profesor odpowiedzial, "Nie widze powodu ktorego nie mielibysmy sie wtedy spotkac. Przeciez wygladasz calkiem zdrowo." (A younger professor said to an elder professor at the occasion of his 60*th birthday, "I should be most happy to see you when you are 100 years old." Then the elder professor answered, "I don't see why you shouldn't. You look quite healthy.")

"Sto lat, sto lat, niech zyje nam, Andrzej!"

Shigeru Kanemitsu

* I was asked by Professor Schinzel to raise this number to 80 so as to be realistic, but I do want to keep this to be 60 and wish him a longevity, expecting to meet him when he is 100 years old.

Number Theory and its Applications-数論とその応用 研究集会

京都大学数理解析研究所の共同研究事業の一つとして、下記のように研究集会を催します
ので、ご案内申し上げます。

研究代表者 金光滋

(近畿大・九州工)

記

日時：1997年11月10日(月) 13:50～

11月14日(金) 17:55

場所：京都大学数理解析研究所4階402号室

京都市左京区北白川追分町

市バス 農学部前 または 北白川下車

プログラム

11月10日(月)

13:50-13:55 挨拶および謝辞

13:55-14:45 田村純一(国際短大)

ある無限語のパデ近似

15:05-15:20 古屋淳(名大・多元数理)

A mean value result on the error term related to certain
exponential sums involving the divisor function

15:25-15:55 H. H. Chan(シンガポール国立大)

Cubic Russell-type modular equations and new Ramanujan-type
series for $\frac{1}{\pi}$ (Wen-Chin Liawとの共同研究)

16:00-16:30 秋山茂樹(新潟大・理)

Pisot 数系と自己アファインタイリング

16:35-16:50 吉元昌巳(九大・数理科学)

Farey 分数とリーマン予想

17:00-17:50 K. Alladi(フロリダ大)

Invariants under partition conjugation and q-series identities

11月11日(火)

10:00-10:50 J. Bruedern(シュトゥットガルト大)

Diophantine analysis of cubic forms

- 11:00-11:50 A. Laurinchikas (ヴィリニユス大)
Several value-distribution theorems for the Lerch zeta-function
- 14:20-15:10 桂田昌紀 (鹿児島大・理)
松本耕二 (名大・多元数理)
An asymptotic formula for certain mean square of the derivatives
of Hurwitz zeta-functions
- 15:20-15:50 D. Duverney (リル大)
西岡久美子 (慶応大・経済)
西岡啓二 (慶応大・環境情報)
塩川宇賢 (慶応大・理工)
Transcendence of Rogers-Ramanujan continued fraction and
reciprocal sum of Fibonacci numbers
- 16:20-16:50 西岡久美子 (慶応大・経済)
田中孝明 (慶応大・理工)
Wenn Zhi-ying (武漢大)
Substitution in two letters and transcendence
- 17:00-17:50 B. Berndt (イリノイ大)
The other 40% of Ramanujan's Lost Notebook
- 11月12日(水)
- 9:50-10:40 A. Schinzel (ポーランド科学アカデミー)
Exponential congruences
- 10:50-11:40 K. Györy (デブレツェン大)
題未定
- 11:50-12:40 V. Bernik (白ロシア科学アカデミー)
An application of Lebesgue measure and Hausdorff dimension to
the investigation of transcendence measure
- 11月13日(木)
- 10:00-10:50 上原健 (佐賀大・理工)
Introduction to the theory of error-correcting codes
- 11:00-11:50 小山信也 (慶応大・理工)
Survey on recent results of Sarnak-Rudnick-Katz on zeros of zeta
functions
- 14:20-14:35 熊谷博 (九大・数理科学)

ゼータ関数を含む無限和の応用

14:40-14:55

神谷諭一 (名大・多元数理)

On the Estermann zeta function

15:05-15:35

河野美文 (佐賀大・理工)

中原徹 (佐賀大・理工)

一般Fibonacci数を割る素数の集合のある密度について

16:00-16:50

中村憲 (都立大・理)

Recent developements of computational number theory

17:00-17:50

三宅克哉 (都立大・理)

On class field theory

11月14日(金)

9:30-10:00

平田(河野)典子 (日本大・理工)

On Wirsing's approximation

10:10-11:00

本橋洋一 (日本大・理工)

Number theory and the Lovachevsky-Beltrami spaces

11:10-12:00

江上繁樹 (富山大・工)

Dirichlet series attached to positive matrices---Mitsui's problem

14:20-14:50

木内功 (山口大・理)

谷川好男 (名大・多元数理)

The mean value theorem of the divisor problem for short intervals

15:00-15:30

S. D. Adhikari (メータ研究所)

On some questions related to lattice points on the plane

15:50-16:20

川田浩一 (岩手大・教育)

On Waring-Goldbach problem for 4th and 5th powers

(T.D.Wooleyとの共同研究)

16:30-17:00

畑政義 (京大・総合人間)

C^2 -saddle method and its application

17:05-17:30

天羽雅昭 (群馬大・工)

On algebraic independence of certain functions related to the elliptic modular function

17:35-17:55

浜畑芳紀 (東京理大・理工)

Hilbert尖点形式の空間と $SL(2, F_q)$ の表現



Nagasaka, Matsumoto, Chan,
Lanrinchikas, Egami,
Okazaki, Amou, Katsurada,
Bruedern, Kawada, Alladi
at Kinkakuji Temple



A. a. participants in the conference room



Chan, Berndt, Schinzel
at Ginkakuji Temple

Number Theory and its Applications—数論とその応用
研究集会報告集

1997年11月10日～11月14日

研究代表者 金光 滋 (Shigeru Kanemitsu)

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