CONTEMPORARY MATHEMATICS

664

Advances in the Theory of Automorphic Forms and Their *L*-functions

Worskhop in Honor of James Cogdell's 60th Birthday
October 16–25, 2013
Erwin Schrödinger Institute, University of Vienna,
Vienna, Austria

Dihua Jiang
Freydoon Shahidi
David Soudry
Editors

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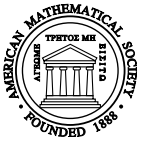

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Preface

This volume is a collection of papers dedicated to James Cogdell on the occasion of his 60th birthday and was initiated after the workshop "Advances in the Theory of Automorphic Forms and Their L–functions" was held in his honor at the Erwin Schrödinger Institute (ESI) of the University of Vienna during the period October 16-25, 2013. Members of organizing committee were Dihua Jiang, Peter Sarnak, Joachim Schwermer and Freydoon Shahidi.

A good number of authors are among those who spoke during the workshop. But there are papers from others whose work are related to or are influenced by Cogdell's work.

Cogdell's work spans a period of 30 years and includes fundamental contributions to the theory of automorphic forms and L–functions, as well as number theory. Among his most influential work are his collaborations with Ilya Piatetski–Shapiro on establishing highly flexible and useful converse theorems which have led to striking new results on Langlands functoriality principle, with deep consequences in number theory including new bounds towards the Ramanujan conjecture, at the turn of this century. This was done either through direct contributions of the two of them, together with Kim and Shahidi in the case of classical groups, or indirectly as a consequence of their converse theorems in establishing important cases of functoriality for symmetric powers of $GL(2)$ in the work of the latter two of the authors. These cases of functoriality are not available from any other approach.

Cogdell's contributions to the direct theory of L–functions are also quite profound and have led to a better understanding of Hecke theory for Rankin–Selberg L–functions.

Cogdell's work has also played a crucial role in the progress made in important problems in number theory such as subconvexity estimates for L–functions, as well as proper use of Waldspurger's formula. These have led to a resolution of Hilbert's eleventh problem, jointly with Piatetski–Shapiro and Sarnak, as well as important applications of his work with Piatetski–Shapiro in spectral theory.

Another aspect of Cogdell's career is his superb talent in exposition which presents itself through his many excellent survey articles and lecture series.

The workshop and the papers contributed to this volume circle around subjects of interest to Cogdell and beyond, including the theory of automorphic forms and their L–functions, geometry and number theory, covering some of the recent approaches and advances to these subjects.

On behalf of the organizing committee, we would like to thank the speakers that contributed to the workshop, as well as those who provided articles for this volume. Many thanks are also due to our referees for their meticulous and careful reading of the manuscripts in a timely manner.

We would like to conclude by expressing our appreciation and thanks to ESI, its staff, and the University of Vienna, and particularly ESI's Director, Joachim Schwermer, for his support and ideas as well as playing a crucial role as one of the workshop's organizers.

D. Jiang, F. Shahidi and D. Soudry

CONM 664

Automorphic Forms and L-Functions • Jiang et al., Editors

This volume contains the proceedings of the workshop on "Advances in the Theory of Automorphic Forms and Their L-functions", held in honor of James Cogdell's 60th birthday, held from October 16–25, 2013, at the Erwin Schrödinger Institute (ESI) at the University of Vienna.

The workshop and the papers contributed to this volume circle around such topics as the theory of automorphic forms and their L-functions, geometry and number theory, covering some of the recent approaches and advances to these subjects. Specifically, the papers cover aspects of representation theory of p-adic groups, classification of automorphic representations through their Fourier coefficients and their liftings, L-functions for classical groups, special values of L-functions, Howe duality, subconvexity for L-functions, Kloosterman integrals, arithmetic geometry and cohomology of arithmetic groups, and other important problems on L-functions, nodal sets and geometry.

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