

**Speakers at Special Sessions
at AMS Meetings (1983-1986)**

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Total checked:	3,906	

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	1986	1985	1984	1983
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Female:	9 14%	10 14%	8 11%	8 13%

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Female:	82 21%	81 20%	87 20%	89 20%	88 17%	102 18%	87 15%	93 16%	89 14%	87 13%

NONCOMMUTATIVE HARMONIC ANALYSIS

Michael E. Taylor

This book explores some basic ideas of Lie groups in linear analysis, with particular emphasis on the generalizations of the Fourier transform and the study of partial differential equations. It began as lecture notes for a one semester graduate course given by the author in noncommutative harmonic analysis. It is a valuable resource for both graduate students and faculty, and requires only a background with Fourier analysis and basic functional analysis, plus the first few chapters of a standard text on Lie groups.

The basic method of noncommutative harmonic analysis, a generalization of Fourier analysis, is to synthesize operators on a space on which a Lie group has a unitary representation from operators on irreducible representation spaces. Though the general study is far from complete, this book covers a great deal of the progress that has been made on important classes of Lie groups.

Unlike many other books on harmonic analysis, this book focuses on the relationship between harmonic analysis and partial differential equations. The author considers many classical PDEs, particularly boundary

value problems for domains with simple shapes that exhibit noncommutative groups of symmetries. Also, the book contains detailed work, which has not previously been published, on the harmonic analysis of the Heisenberg group and harmonic analysis on cones.

Contents

Some basic concepts of Lie group representation theory
The Heisenberg group
The unitary group
Compact Lie groups
Harmonic analysis on spheres
Induced representations
Systems of imprimitivity
and semidirect products
Nilpotent Lie groups
Harmonic analysis on cones
SL(2, R)
SL(2, C)
and more general Lorentz groups
Groups of conformal transformations
The symplectic group and the metaplectic group
Spheres
Semisimple Lie groups

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