mini

Several complex variables and analytic spaces

Non-Archimedean analysis (should also be assigned at least one other classification number from Section 32-XX describing the type of problem)

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Holomorphic convexity

- Holomorphic, polynomial and rational approximation, and interpolation in several complex variables; Runge pairs
- Global boundary behavior of holomorphic functions of several complex variables
- Polynomial convexity, rational convexity, meromorphic convexity in several complex variables
- Holomorphically convex complex spaces, reduction theory
- The Levi problem
- Stein spaces, Stein manifolds

Computational methods for problems pertaining to several complex variables and analytic spaces

Complex singularities

- Topological aspects of complex singularities: Lefschetz theorems, topological classification, invariants
- Milnor fibration; relations with knot theory
- Stratifications; constructible sheaves; intersection cohomology (complex-analytic aspects)
- Monodromy; relations with differential equations and D-modules (complex-analytic aspects)
- Equisingularity (topological and analytic)
- Relations with arrangements of hyperplanes
- Other operations on complex singularities
- Modifications; resolution of singularities (complex-analytic aspects)
- Global theory of complex singularities; cohomological properties
- Mixed Hodge theory of singular varieties (complex-analytic aspects)
- Invariants of analytic local rings
- Deformations of complex singularities; vanishing cycles
- Singularities of holomorphic vector fields and foliations
- Local complex singularities
- Complex surface and hypersurface singularities

Holomorphic functions of several complex variables

- Normal families of holomorphic functions, mappings of several complex variables, and related topics (taut manifolds etc.)
- Integral representations, constructed kernels (e.g., Cauchy, Fantappiè-type kernels)
- Other generalizations of function theory of one complex variable (should also be assigned at least one classification number from Section 30-XX)
- Other spaces of holomorphic functions of several complex variables (e.g., bounded mean oscillation (BMOA), vanishing mean oscillation (VMOA))
- Multifunctions of several complex variables
- Nevanlinna theory; growth estimates; other inequalities of several complex variables
- Hyperfunctions
- Functional analysis techniques applied to functions of several complex variables
- Residues for several complex variables
- Holomorphic functions of several complex variables
- H^p-spaces, Nevanlinna spaces of functions in several complex variables
- Boundary behavior of holomorphic functions of several complex variables
- Bergman spaces of functions in several complex variables
- Banach algebra techniques applied to functions of several complex variables
- Integral representations; canonical kernels (Szegő, Bergman, etc.)
- Singular integrals of functions in several complex variables
- Polynomials and rational functions of several complex variables
- Zero sets of holomorphic functions of several complex variables
- Power series, series of functions of several complex variables
- Bloch functions, normal functions of several complex variables
- Algebras of holomorphic functions of several complex variables
- Special families of functions of several complex variables
- Entire functions of several complex variables
- Meromorphic functions of several complex variables
- Harmonic analysis of several complex variables

Holomorphic mappings and correspondences

- Iteration of holomorphic maps, fixed points of holomorphic maps and related problems for several complex variables
- Picard-type theorems and generalizations for several complex variables
- Holomorphic mappings, (holomorphic) embeddings and related questions in several complex variables
- Boundary uniqueness of mappings in several complex variables
- Boundary regularity of mappings in several complex variables
- Proper holomorphic mappings, finiteness theorems
- Meromorphic mappings in several complex variables
- Value distribution theory in higher dimensions

Pseudoconvex domains

- Geometric and analytic invariants on weakly pseudoconvex boundaries
- Domains of holomorphy
- Strongly pseudoconvex domains
- Exhaustion functions
- Finite-type domains
- Peak functions
- Worm domains

History of several complex variables and analytic spaces

Deformations of analytic structures

- Moduli and deformations for ordinary differential equations (e.g., Knizhnik-Zamolodchikov equation)
- Deformations of submanifolds and subspaces
- Moduli of Riemann surfaces, Teichmüller theory (complex-analytic aspects in several variables)
- Applications of deformations of analytic structures to the sciences
- Deformations of complex structures
- Complex-analytic moduli problems
- Deformations of special (e.g., CR) structures
- Period matrices, variation of Hodge structure; degenerations
- Deformations of fiber bundles

Complex manifolds

- Special domains (Reinhardt, Hartogs, circular, tube, etc.) in $\mathbb{C}^n$ and complex manifolds
- Embedding theorems for complex manifolds
- Calabi-Yau theory (complex-analytic aspects)
- Notions of stability for complex manifolds
- Topological aspects of complex manifolds
- Negative curvature complex manifolds
- Positive curvature complex manifolds
- Uniformization of complex manifolds
- Kähler manifolds
- Oka principle and Oka manifolds
- Complex manifolds as subdomains of Euclidean space
- Kähler-Einstein manifolds
- Hyperbolic and Kobayashi hyperbolic manifolds
- Almost complex manifolds
- Pseudoholomorphic curves
- Classification theorems for complex manifolds
- Stein manifolds

Complex spaces with a group of automorphisms

- Hermitian symmetric spaces, bounded symmetric domains, Jordan algebras (complex-analytic aspects)
- Almost homogeneous manifolds and spaces
- Automorphism groups of other complex spaces
- Automorphism groups of $\mathbb{C}^n$ and affine manifolds
- Complex vector fields, holomorphic foliations, $\mathbb{C}$-actions
- Homogeneous complex manifolds
- Complex Lie groups, group actions on complex spaces

Analytic spaces

- Real-analytic sets, complex Nash functions
- Applications of analytic spaces to physics and other areas of science
- Analytic sheaves and cohomology groups
- Embedding of real-analytic manifolds
- Duality theorems for analytic spaces
- Local cohomology of analytic spaces
- Analytic subsets and submanifolds
- Sheaves of differential operators and their modules, D-modules
- Embedding of analytic spaces
- Topology of analytic spaces
- Complex spaces
- The Levi problem in complex spaces; generalizations
- Integration on analytic sets and spaces, currents
- Complex supergeometry
- Real-analytic manifolds, real-analytic spaces
- Normal analytic spaces

Local analytic geometry

- Triangulation and topological properties of semi-analytic andsubanalytic sets, and related questions
- Analytic subsets of affine space
- Analytic algebras and generalizations, preparation theorems
- Semi-analytic sets, subanalytic sets, and generalizations
- Germs of analytic sets, local parametrization

Holomorphic fiber spaces

- Sheaves and cohomology of sections of holomorphic vector bundles, general results
- Twistor theory, double fibrations (complex-analytic aspects)
- Holomorphic bundles and generalizations
- Applications of holomorphic fiber spaces to the sciences
- Vanishing theorems
- Bundle convexity

Generalizations of analytic spaces

- Holomorphic maps with infinite-dimensional arguments or values
- Formal and graded complex spaces
- Banach analytic manifolds and spaces
- Differentiable functions on analytic spaces, differentiable spaces

Pluripotential theory

- Removable sets in pluripotential theory
- General pluripotential theory
- Plurisubharmonic exhaustion functions
- Capacity theory and generalizations
- Plurisubharmonic extremal functions, pluricomplex Green functions
- Plurisubharmonic functions and generalizations
- Lelong numbers
- Currents

CR manifolds

- Finite-type conditions on CR manifolds
- Extension of functions and other analytic objects from CR manifolds
- Real submanifolds in complex manifolds
- CR structures, CR operators, and generalizations
- CR manifolds as boundaries of domains
- Embeddings of CR manifolds
- Analysis on CR manifolds
- CR functions

Differential operators in several variables

- $\overline{\partial}_b$ and $\overline{\partial}_b$-Neumann operators
- Complex Monge-Ampère operators
- Heat kernels in several complex variables
- Pseudodifferential operators in several complex variables
- Other partial differential equations of complex analysis in several variables
- $\overline{\partial}$ and $\overline{\partial}$-Neumann operators

Geometric convexity in several complex variables

- Other notions of convexity in relation to several complex variables
- q-convexity, q-concavity
- Invariant metrics and pseudodistances in several complex variables
- Finite-type conditions for the boundary of a domain
- Analytical consequences of geometric convexity (vanishing theorems, etc.)
- Topological consequences of geometric convexity

Automorphic functions

- Automorphic functions in symmetric domains
- Automorphic forms in several complex variables
- General theory of automorphic functions of several complex variables

Compact analytic spaces

- Compactification of analytic spaces
- Compact Kähler manifolds: generalizations, classification
- Transcendental methods of algebraic geometry (complex-analytic aspects)
- Applications of compact analytic spaces to the sciences
- Algebraic dependence theorems
- Compact complex 3-folds
- Compact complex n-folds
- Compact complex surfaces

Analytic continuation

- Continuation of analytic objects in several complex variables
- Domains of holomorphy
- Removable singularities in several complex variables
- Envelopes of holomorphy
- Riemann domains

Special functions

Hypergeometric functions

- Orthogonal polynomials and functions in several variables expressible in terms of special functions in one variable
- Hypergeometric integrals and functions defined by them (E, G, H and I functions)
- Orthogonal polynomials and functions of hypergeometric type (Jacobi, Laguerre, Hermite, Askey scheme, etc.)
- Connections of hypergeometric functions with groups and algebras, and related topics
- Applications of hypergeometric functions
- Appell, Horn and Lauricella functions
- Generalized hypergeometric series, ${}_pF_q$
- Orthogonal polynomials and functions associated with root systems
- Confluent hypergeometric functions, Whittaker functions, ${}_1F_1$
- Bessel and Airy functions, cylinder functions, ${}_0F_1$
- Other hypergeometric functions and integrals in several variables
- Hypergeometric functions associated with root systems
- Other special orthogonal polynomials and functions
- Classical hypergeometric functions, ${}_2F_1$
- Elliptic integrals as hypergeometric functions
- Spherical harmonics

Elementary classical functions

- Incomplete beta and gamma functions (error functions, probability integral, Fresnel integrals)
- Gamma, beta and polygamma functions
- Exponential and trigonometric functions
- Higher logarithm functions

Computational aspects of special functions

- Symbolic computation of special functions (Gosper and Zeilberger algorithms, etc.)
- Numerical approximation and evaluation of special functions

History of special functions

Basic hypergeometric functions

- Basic orthogonal polynomials and functions associated with root systems (Macdonald polynomials, etc.)
- Basic orthogonal polynomials and functions (Askey-Wilson polynomials, etc.)
- Connections of basic hypergeometric functions with quantum groups, Chevalley groups, p-adic groups, Hecke algebras, and related topics
- Orthogonal polynomials and functions in several variables expressible in terms of basic hypergeometric functions in one variable
- Bibasic functions and multiple bases
- Other basic hypergeometric functions and integrals in several variables
- q-gamma functions, q-beta functions and integrals
- Basic hypergeometric functions in one variable, ${}_r\phi_s$
- Basic hypergeometric integrals and functions defined by them
- Basic hypergeometric functions associated with root systems
- Applications of basic hypergeometric functions

Other special functions

- Lamé, Mathieu, and spheroidal wave functions
- Special functions in characteristic p (gamma functions, etc.)
- Mittag-Leffler functions and generalizations
- Elliptic functions and integrals
- Other functions coming from differential, difference and integral equations
- Painlevé-type functions
- Other functions defined by series and integrals
- Other wave functions