

POLSKA AKADEMIA NAUK, INSTYTUT MATEMATYCZNY

ANNALES POLONICI MATHEMATICI

REDAKTOROWIE

STANISŁAW ŁOJASIEWICZ, JÓZEF SICIAK

KOMITET REDAKCYJNY

A. BIELECKI, B. BOJARSKI, Z. CHARZYŃSKI,
K. GEBA, P. JAKÓBCZAK (SEKRETARZ), J. KRZYŻ,
A. LASOTA, K. MAURIN, C. OLECH, W. PLEŚNIAK,
B. SZAFIRSKI, W. M. ZAJĄCZKOWSKI

LXX

PROCEEDINGS OF THE CONFERENCE

July 14–25, 1997, Banach Center, Warszawa, Poland

EDITORS OF THE PROCEEDINGS:

ANNE-MARIE CHOLLET (Lille, France)
EVGENI CHIRKA (Moscow, Russia)
ROMAN DWILEWICZ (Warszawa, Poland)
HOWARD JACOBOWITZ (Camden, NJ, USA)
JÓZEF SICIAK (Kraków, Poland)

WARSZAWA 1998



First week of the conference. From left to right, roughly by rows, starting from the front row:
Jean-Pierre Rosay, George Marinescu, Armen Sergeev, Tomasz Zajac, Nikolai Shcherbina, Evgeni Chirka, Eric Amar, Howard Jacobowitz, Stefan Nemirovsky; Roman Dwilewicz, Jean-Jacques Szczeciniarz, Alexandra Domrina, Gheorghe Gussi, Frédéric Sarkis, Niklas Lindholm, Mauro Nacinovich, Victoria Paolantoni, Georges Weill, Abdelhamid Meziani, Morris Kalka, Mei-Chi Shaw, Joaquin Ortega, Andriy Panasyuk; Stéphane Rigat, John Bland, Laszlo Lempert, Al Boggess, Abbes Neciri, Moulay-Youssef Barkatou, Anne-Marie Chollet, Ewa Ligocka, Armen Edigarian, H. Martin Reimann, Robert Szőke, Sid Webster; Sergei Ivashkovich, Ozan Öktem, Lars Filipsson, Masatake Kuranishi, Pierre Dolbeault, Wiesław Pleśniak, Zbigniew Śłodkowski, Georges Dloussky, Anne Cumenge, Erik Andersen, Julien Duval, David Barrett; Andrei Domrin, Vladimir Ežov, Emil Straube, Bruno Fabre, Egmont Porten, Bruce Gilligan, C. Denson Hill, Ahmed Zeriah, Stefan Halverscheid, Zbigniew Śłodkowski, Joël Merker.



Second week of the conference. From left to right, roughly by rows, starting from the front row:
Andrei Domrin, Alexandra Domrina, Larissa Ivashkovich, Joseph J. Kohn, Józef Siciak, Roman Dwilewicz, Sławomir Kołodziej, Anna Łazińska, Gabriela Kahr; David Barnett, Armen Sergeev, Ewa Ligocka, Anne-Marie Chollet, Friedrich Haslinger, Tomasz Załąc, Erik Andersen, Zbigniew Blocki, Włodzimierz Zwonek, Mirela Kahr; Takao Akahori, Lucas Zinner, Robert Szőke, Gerd Dethloff, Georges Weill, Jean-Pierre Rosay, Marek Jarnicki, Alexander Himonas, Bruno Fabre, Peter Pflug.

FOREWORD

This is the Proceedings of the conference “Complex Analysis and Applications” which took place at the International Banach Center, Warszawa, Poland, from July 14 to July 25, 1997. The Organizing Committee of the conference consisted of Evgeni Chirka (Moscow, Russia), Anne-Marie Chollet (Lille, France), Roman Dwilewicz (Warszawa, Poland), Howard Jacobowitz (Camden, NJ, USA), and Józef Siciak (Kraków, Poland).

The conference gathered almost a hundred mathematicians from all over the world, who represented various directions in Complex Analysis.

The conference has been supported by the Institute of Mathematics of the Polish Academy of Sciences, Committee for Scientific Research, and Committee of Mathematical Sciences of the Polish Academy of Sciences. The Organizing Committee expresses gratitude to these institutions.

For the Organizing Committee,

Roman Dwilewicz

CONTENTS

List of participants	v–vi
Lectures and short communications	vii–ix
M.-Y. BARKATOU, Some applications of a new integral formula for $\bar{\partial}_b$	1–24
D. E. BARRETT, On a problem of Seiberg and Witten	25–34
A. BOGESS, The holomorphic extension of C^k CR functions on tube submanifolds	35–42
E. CHIRKA and J.-P. ROSAY, Remarks on the proof of a generalized Hartogs Lemma	43–47
G. DLOUSSKY and F. KOHLER, Classification of singular germs of mappings and deformations of compact surfaces of class VII_0	49–83
V. V. EŽOV, Triviality of scalar linear type isotropy subgroup by passing to an alternative canonical form of a hypersurface	85–97
V. V. EŽOV and G. SCHMALZ, Special normal form of a hyperbolic CR-manifold in \mathbb{C}^4	99–107
F. HASLINGER, The Bergman kernel functions of certain unbounded domains	109–115
A. A. HIMONAS, Analytic hypoellipticity for sums of squares of vector fields	117–129
S. IVASHKOVICH, Complex Plateau problem in non-Kähler manifolds	131–143
P. JAKÓBCZAK, Holomorphic functions of fast growth on submanifolds of the domain	145–155
I. V. MARESIN and A. G. SERGEEV, A microlocal version of Cartan–Grauert’s theorem	157–162
J. MERKER and E. PORTEN, On the local meromorphic extension of CR meromorphic mappings	163–193
O. ÖKTEM, Extension of separately analytic functions and applications to range characterization of the exponential Radon transform	195–213
R. SZÓKE, Adapted complex structures and Riemannian homogeneous spaces	215–220
G. C. WEN, Application of complex analysis to second order equations of mixed type	221–231

On pages 233–269, you will find the index of volumes LI–LXX of *Annales Polonici Mathematici*.

LIST OF PARTICIPANTS

- | | |
|---|--|
| Takao Akahori (Japan) | Howard Jacobowitz (USA) |
| Eric Amar (France) | Piotr Jakóbczak (Poland) |
| Erik Andersen (Sweden and USA) | Marek Jarnicki (Poland) |
| Moulay-Youssef Barkatou (France) | Włodzimierz Jelonek (Poland) |
| David Barrett (USA) | Jerzy Kalina (Poland) |
| John Bland (Canada) | Morris Kalka (USA) |
| Zbigniew Blocki (Poland) | George Khimshiashvili (Georgia and Poland) |
| Al Boggess (USA) | Joseph J. Kohn (USA) |
| Natasha A. Buruchenko (Russia) | Gabriela Kohr (Romania) |
| Evgeni Chirka (Russia) | Mirela Kohr (Romania) |
| Anne-Marie Chollet (France) | Sławomir Kołodziej (Poland) |
| Anne Cumenge (France) | Wiesław Królikowski (Poland) |
| Gerd Dethloff (France and Japan) | Masatake Kuranishi (USA) |
| George Dloussky (France) | Julian Ławrynowicz (Poland) |
| Pierre Dolbeault (France) | Anna Lazińska (Poland) |
| Andrei Domrin (Russia) | Laszlo Lempert (USA) |
| Alexandra Domrina (Russia) | Ewa Ligocka (Poland) |
| Julien Duval (France) | Niklas Lindholm (Sweden) |
| Roman Dwilewicz (Poland) | George Marinescu (Romania and UK) |
| Armen Edigarian (Poland) | Joël Merker (France) |
| Vladimir V. Ežov (Australia) | Abdelhamid Meziani (USA) |
| Bruno Fabre (France) | Mauro Nacinovich (Italy) |
| Lars Filipsson (Sweden) | Abbes Neceri (France) |
| Laura Geatti (Italy) | Stefan Yurievich Nemirovsky (Russia) |
| Bruce Gilligan (Canada) | Ozan Öktem (Sweden) |
| G. Gussi (Romania) | Joaquin Ortega (Spain) |
| Stefan Halverscheid (Germany) | Andriy Panasyuk (Poland) |
| Friedrich Haslinger (Austria) | Victoria Paolantoni (France) |
| C. Denson Hill (USA) | Dariusz Partyka (Poland) |
| Alexander A. Himonas (USA) | Peter Pflug (Germany) |
| Alan Huckleberry (Germany and Japan) | Wiesław Pleśniak (Poland) |
| Sergei Ivashkovich (France and Ukraine) | Egmont Porten (Germany) |

Claudio Rea (Italy)	Robert Szőke (Hungary)
H. Martin Reimann (Switzerland)	Jan Szynal (Poland)
Stéphane Rigat (France)	Irina Tsikh (Russia)
Jean-Pierre Rosay (USA)	Sid Webster (USA)
Frederic Sarkis (France)	Georges Weill (USA)
Gerd Schmalz (Germany)	Guo-chun Wen (China)
Armen Sergeev (Russia)	Agnieszka Wieczorek (Poland)
Mei-Chi Shaw (USA)	Józef Zająć (Poland)
Nikolai Shcherbina (Sweden and Ukraine)	Tomasz Zająć (Poland)
Józef Siciak (Poland)	Ahmed Zeriahi (France)
Zbigniew Śłodkowski (USA)	Lucas Zinner (Austria)
Emil Straube (USA)	Włodzimierz Zwonek (Poland)
Jean-Jacques Szczeciniarz (France)	

LECTURES AND SHORT COMMUNICATIONS

Fifty-minute lectures

- TAKAO AKAHORI (Himeji, Japan), Hodge theory on weakly pseudoconvex CR manifolds.
ERIC AMAR (Bordeaux, France), Interpolating sequence and universal divisor in the Hardy classes of the ball.
DAVID BARRETT (Ann Arbor, MI, USA), Seiberg–Witten metrics in complex dimension one.
JOHN BLAND (Toronto, Canada), Deformations of embeddable 3-dimensional CR structures.
ZBIGNIEW BŁOCKI (Kraków, Poland), Local and interior regularity of the complex Monge–Ampère operator.
AL BOGESS (College Station, TX, USA), CR H^p functions on tubes.
GERD DETHLOFF (Brest, France and Osaka, Japan), Jet metrics and hyperbolic manifolds.
GEORGES DLOUSSKY (Marseille, France), Foliations on compact complex surfaces containing global spherical shells.
PIERRE DOLBEAULT (Paris, France), On holomorphic chains with given boundary: recent results.
JULIEN DUVAL (Toulouse, France), On the extremal psh function relative to two convex sets.
ARMEN EDIGARIAN (Kraków, Poland), Pluricomplex Green function.
VLADIMIR EŽOV (Adelaide, Australia), On the rigidity of automorphisms of high codimensional quadratic CR-manifolds.
STEFAN HALVERSCHEID (Bochum, Germany), On the linearization of holomorphic completely integrable systems.
FRIEDRICH HASLINGER (Wien, Austria), Bergman and Hardy spaces on model domains.
C. DENSON HILL (Stony Brook, NY, USA), Global pseudoconcave CR manifolds.
ALEX HIMONAS (Notre Dame, IN, USA), Analytic hypoellipticity for sums of squares of vector fields.
ALAN HUCKLEBERRY (Bochum, Germany), Symplectic reduction: From statistical physics to moduli of varieties.
SERGEI IVASHKOVICH (Lille, France), Pseudo-holomorphic curves and envelopes of meromorphy, Parts I, II, and III.
MAREK JARNICKI (Kraków, Poland), Open questions around invariant distances—a survey, I.
MORRIS KALKA (New Orleans, LA, USA), Singular Monge–Ampère foliations.
JOSEPH J. KOHN (Princeton, NJ, USA), Propagation and creation of singularities.
SŁAWOMIR KOŁODZIEJ (Kraków, Poland), Some entire solutions to the complex Monge–Ampère equation.

- MASATAKE KURANISHI (New York, NY, USA), The construction of tubular neighborhoods of CR structures (progress report).
- LASZLO LEMPERT (West Lafayette, IN, USA), Complex analysis in infinite dimensions.
- EWA LIGOCKA (Warszawa, Poland), Bergman kernel function for worm domains.
- HAMID MEZIANI (Miami, FL, USA), Mizohata structures on the 2-dimensional sphere.
- MAURO NACINOVICH (Pisa, Italy), Weak unique continuation in abstract pseudoconcave CR manifolds (in collaboration with Laura De Carli).
- JOAQUIN ORTEGA (Barcelona, Spain), Convergence in non-isotropic regions of some spaces of harmonic functions in B^n .
- PETER PFLUG (Oldenburg, Germany), Open questions around invariant distances—a survey, II.
- CLAUDIO REA (Roma, Italy), Differentiable CR mappings and CR orbits.
- H. MARTIN REIMANN (Bern, Switzerland), Complex hyperbolic space: the invariant first order differential operators.
- JEAN-PIERRE ROSAY (Madison, WI, USA), Uniqueness in the Cauchy problem, and CR functions.
- GERD SCHMALZ (Bonn, Germany), Holomorphic automorphisms of a pseudoconvex CR-manifold in \mathbb{C}^4 of codimension 2.
- ARMEN G. SERGEEV (Moscow, Russia), Extended future tube conjecture revisited.
- MEI-CHI SHAW (Notre Dame, IN, USA), The $\bar{\partial}$ problem on domains with piecewise smooth boundaries with applications.
- NIKOLAI SHCHERBINA (Göteborg, Sweden), The Dirichlet problem for Levi-flat graphs.
- ZBIGNIEW SŁODKOWSKI (Chicago, IL, USA), On pseudoconcave pluripolar sets.
- EMIL STRAUBE (College Station, TX, USA), Subellipticity of the $\bar{\partial}$ -Neumann problem on non-smooth domains of finite type.
- JEAN-JACQUES SZCZECINIARZ (Paris, France), Integral transform in some open domain on $P_n(C)$.
- ROBERT SZŐKE (Budapest, Hungary), Adapted complex structures.
- SID WEBSTER (Chicago, IL, USA), Extremal discs for an ellipsoid.
- AHMED ZERIAHI (Toulouse, France), An algebraicity criterion in terms of the minimal Lelong number.

25-minute communications

- ERIK ANDERSEN (Madison, WI, USA), Complete polynomial vector fields.
- MOULAY-YOUSSEF BARKATOU (Grenoble, France), Optimal regularity for $\bar{\partial}_b$ on CR manifolds.
- NATALYA BURUCHENKO (Krasnoyarsk, Russia), Generalization of the Froissart theorem to toric manifolds.
- ANNE CUMENGE (Toulouse, France), Sharp Hölder estimates for the $\bar{\partial}$ on convex domains of finite type.
- ANDREI DOMRIN (Moscow, Russia), Real and complex manifolds with common boundary in the complex space.
- ALEXANDRA DOMRINA (Moscow, Russia), Four-sheeted polynomial mappings of \mathbb{C}^2 (joint work with S. Yu. Orevkov).
- BRUNO FABRE (Paris, France), Intersections of an algebraic variety with complete intersections of complementary dimension.
- LARS FILIPSSON (Stockholm, Sweden), Complex mean value interpolation and approximation of holomorphic functions.

- LAURA GEATTI (Roma, Italy), Geometry of biinvariant subsets of semisimple Lie groups (joint work with Gregor Fels).
- BRUCE GILLIGAN (Regina, Canada), Invariant analytic hypersurfaces in complex Lie groups.
- PIOTR JAKÓBCZAK (Kraków, Poland), Exceptional subsets for functions from the Bergman space.
- GEORGE KHIMSHIASHVILI (Łódź, Poland), Analytic discs and totally real immersions in \mathbb{C}^2 .
- JULIAN ŁAWRYNOWICZ (Łódź, Poland), Hyperkählerian and quaternionic-holomorphic chains versus invariant distances.
- GEORGE MARINESCU (Edinburgh, UK and Bucureşti, Romania), Extending meromorphic functions by the Kohn–Rossi theorem.
- STEFAN NEMIROVSKY (Moscow, Russia), Strictly pseudoconvex domains on algebraic manifolds.
- OZAN ÖKTEM (Stockholm, Sweden), Extension of separately analytic functions and applications to mathematical tomography.
- ANDRIY PANASYUK (Warszawa, Poland), Isomorphisms of some complex Poisson brackets.
- VICTORIA PAOLANTONI (Marseille, France), Subaveraging estimates for CR functions defined on a hypersurface of \mathbb{C}^n .
- EGMONT PORTEN (Paris, France and Berlin, Germany), Removable singularities for integrable CR functions.
- STÉPHANE RIGAT (Marseille, France), Version explicite du principe fondamental d’Ehrenpreis–Malgrange–Palamodov, application au problème de Cauchy.
- FRÉDÉRIC SARKIS (Paris, France), Extension of CR meromorphic functions in the Harvey–Lawson sense.
- IRINA TSIKH (Krasnoyarsk, Russia), On the removability of singularities of CR-hyperfunctions.
- GUO-CHUN WEN (Beijing, China and Berlin, Germany), Applications of complex analysis to equations and systems of mixed type.
- WŁODZIMIERZ ZWONEK (Kraków, Poland), On an example concerning the Kobayashi pseudodistance.