

FUNCTION SPACES IX
BANACH CENTER PUBLICATIONS, VOLUME 92
INSTITUTE OF MATHEMATICS
POLISH ACADEMY OF SCIENCES
WARSZAWA 2011

ORGANIZING COMMITTEE

1. **Julian Musielak** — Adam Mickiewicz University, Poznań, Poland (Honorary Chairman)
2. **Henryk Hudzik** — Adam Mickiewicz University, Poznań, Poland
3. **Grzegorz Lewicki** — Jagiellonian University, Kraków, Poland (Chairman)
4. **Marian Nowak** — University of Zielona Góra, Zielona Góra, Poland
5. **Leszek Skrzypczak** — Adam Mickiewicz University, Poznań, Poland
6. **Jerzy Szczepański** — Jagiellonian University, Kraków, Poland (Secretary)
7. **Krzysztof Wesołowski** — Jagiellonian University, Kraków, Poland (Secretary)

SCIENTIFIC COMMITTEE

1. **Julian Musielak** — Adam Mickiewicz University, Poznań, Poland (Honorary Chairman)
2. **Roman Ger** — Silesian University, Katowice, Poland
3. **Kazimierz Goebel** — Maria Curie-Skłodowska University, Lublin, Poland
4. **Henryk Hudzik** — Adam Mickiewicz University, Poznań, Poland
5. **Grzegorz Lewicki** — Jagiellonian University, Kraków, Poland (Chairman)
6. **Mieczysław Mastyło** — Adam Mickiewicz University, Poznań, Poland
7. **Marian Nowak** — University of Zielona Góra, Zielona Góra, Poland
8. **Stefan Rolewicz** — Institute of Mathematics of the Polish Academy of Sciences, Warsaw, Poland
9. **Leszek Skrzypczak** — Adam Mickiewicz University, Poznań, Poland

INVITED SPEAKERS

1. **Carlo Bardaro**, University of Perugia, Perugia, Italy
2. **Fernando Bombal**, Universidad Complutense de Madrid, Madrid, Spain
3. **Charles Castaing**, University of Montpellier, Montpellier, France
4. **Antonio Granero**, Universidad Complutense de Madrid, Madrid, Spain
5. **Dorothee Haroske**, Friedrich Schiller University of Jena, Jena, Germany
6. **Nigel Kalton**, University of Missouri-Columbia, Columbia, USA
7. **Miroslav Krbec**, Czech Academy of Sciences, Prague, Czech Republic
8. **Lech Maligranda**, Luleå University of Technology, Luleå, Sweden
9. **Józef Myjak**, University of L'Aquila, L'Aquila, Italy, and AGH University of Science and Technology, Kraków, Poland
10. **Pier Luigi Papini**, University of Bologna, Bologna, Italy
11. **Aleksander Pełczyński**, Institute of Mathematics of the Polish Academy of Sciences, Warsaw, Poland
12. **Beata Randrianantoanina**, Miami University, Oxford, Ohio, USA
13. **Zhongrui Shi**, Shanghai University, Shanghai, China
14. **Brailey Sims**, University of Newcastle, Newcastle, Australia
15. **Hans Triebel**, Friedrich Schiller University of Jena, Jena, Germany
16. **Gianluca Vinti**, University of Perugia, Perugia, Italy
17. **Baoxiang Wang**, Peking University, Beijing, China
18. **Yuwen Wang**, Harbin Normal University, Harbin, China
19. **Michał Wojciechowski**, Institute of Mathematics of the Polish Academy of Sciences, Warszawa, Poland.
20. **Przemysław Wojtaszczyk**, University of Warsaw, Warsaw, Poland
21. **Dachun Yang**, School of Mathematical Sciences, Beijing Normal University, Beijing, China

PARTICIPANTS

1. **Aksoy Asuman G.**, Claremont McKenna College, Claremont, California, USA,
asuman.aksoy@claremontmckenna.edu
2. **Angeloni Laura**, Dipartimento di Matematica e Informatica, Università di Perugia, Italy, angeloni@dipmat.unipg.it
3. **Baran Mirosław**, Jagiellonian University, Kraków, Poland,
Miroslaw.Baran@im.uj.edu.pl
4. **Bardaro Carlo**, Dipartimento di Matematica e Informatica, Università di Perugia, Italy, bardaro@unipg.it
5. **Becker Richard**, Paris VI / CNRS, France, beckermath@yahoo.fr
6. **Białas-Cież Leokadia**, Jagiellonian University, Kraków, Poland,
Leokadia.Bialas-Ciez@im.uj.edu.pl
7. **Bohonos Adam**, West Pomeranian University of Technology, Szczecin, Poland,
abohonos@ps.pl
8. **Bombal Fernando**, Facultad de Matemáticas, Universidad Complutense de Madrid, Spain, bombal@mat.ucm.es
9. **Borkowski Marcin**, Adam Mickiewicz University, Poznań, Poland,
mbork@amu.edu.pl
10. **Bugajewska Daria**, Adam Mickiewicz University, Poznań, Poland,
ddb@amu.edu.pl
11. **Cappelletti-Montano Mirella**, Università degli Studi di Bari, Italy,
montano@dm.uniba.it
12. **Castaing Charles**, University of Montpellier, France,
13. **Castillo Jesus**, Departamento de Matemáticas, Universidad de Extremadura, Spain, castillo@unex.es
14. **Ciesielski Maciej**, Department of Mathematical Sciences, The University of Memphis, Memphis, USA, mciesiel@memphis.edu
15. **Colao Vittorio**, Dipartimento di Matematica, Università della Calabria, Italy,
colao@mat.unical.it
16. **Cui Yunan**, Harbin University of Science and Technology, Harbin, China,
cuiya@hrbust.edu.cn
17. **Feledziak Krzysztof**, University of Zielona Góra, Zielona Góra, Poland,
K.Feledziak@wmie.uz.zgora.pl

18. **Foralewski Paweł**, Faculty of Mathematics and Computer Science, Adam Mickiewicz University, Poznań, Poland, katon@amu.edu.pl
19. **Gąsiorowska Alicja**, Faculty of Mathematics and Computer Science, Adam Mickiewicz University, Poznań, Poland, alig@amu.edu.pl
20. **Ger Roman**, Institute of Mathematics, Silesian University, Katowice, Poland, romanger@us.edu.pl
21. **Goebel Kazimierz**, Maria Curie-Skłodowska University, Lublin, Poland, Kazimierz.Goebel@umcs.lublin.pl
22. **Granero Antonio**, Facultad de Matemáticas, Universidad Complutense de Madrid, Spain, AS_granero@mat.ucm.es
23. **Haroske, Dorothee D.**, Mathematical Institute, Friedrich-Schiller-University Jena, Jena, Germany, haroske@minet.uni-jena.de
24. **Hudzik Henryk**, Faculty of Mathematics and Computer Science, Adam Mickiewicz University, Poznań, Poland, hudzik@amu.edu.pl
25. **Hülya Duru**, Istanbul University, Turkey, hduru@istanbul.edu.tr
26. **Kabanava Maryia**, Mathematical Institute, Friedrich-Schiller-University Jena, Jena, Germany, maryia.kabanava@uni-jena.de
27. **Kaczmarek Radosław**, Adam Mickiewicz University, Poznań, Poland, radekk@amu.edu.pl
28. **Kalton Nigel**, Department of Mathematics, University of Missouri, Columbia, USA, kaltonn@missouri.edu
29. **Kananthai Amnuay**, Faculty of Science, Chiang Mai University, Thailand, malamnka@science.cmu.ac.th
30. **Karlovich Alexiei**, Lisboa, Portugal, cyk@fct.uni.pt
31. **Kasior Ewa**, University of Szczecin, Szczecin, Poland, ekasior@univ.szczecin.pl
32. **Kasperski Andrzej**, Politechnika Śląska, Gliwice, Poland, Andrzej.Kasperski@polsl.pl
33. **Kasprzak Piotr**, Adam Mickiewicz University, Poznań, Poland, kasp@amu.edu.pl
34. **Katchang Phayap**, Rajamangala University of Technology, Lanna Tak, Thailand, phayapk@hotmail.com
35. **Kąkolewicz Agata**, Adam Mickiewicz University, Poznań, Poland, agatha.marina@gmail.com
36. **Kochanek Tomasz**, Institute of Mathematics, Silesian University, Katowice, Poland, tkochanek@math.us.edu.pl
37. **Kolwicz Paweł**, Institute of Mathematics, Poznań University of Technology, Poznań, Poland, kolwicz@math.put.poznan.pl
38. **Kominek Zygfried**, Institute of Mathematics, Silesian University, Katowice, Poland, zkominek@ux2.math.us.edu.pl
39. **Kosek Marta**, Jagiellonian University, Kraków, Poland, Marta.Kosek@im.uj.edu.pl
40. **Kowalewski Wojciech**, Faculty of Mathematics and Computer Science, Adam Mickiewicz University, Poznań, Poland, fraktal@amu.edu.pl

41. **Kowynia Joanna**, Faculty of Applied Mathematics, AGH University of Science and Technology, Kraków, Poland, kowynia@wms.mat.agh.edu.pl
42. **Krbec Miroslav**, Institute of Mathematics, Academy of Sciences of the Czech Republic, Prague, Czech Republic, krbeem@math.cas.cz
43. **Kryczka Andrzej**, Maria Curie-Skłodowska University, Lublin, Poland, andrzej.kryczka@umcs.pl
44. **Kubiak Damian**, Department of Mathematical Sciences, The University of Memphis, Memphis, USA, dmkubiak@memphis.edu
45. **Kumam Poom**, Department of Mathematics, Faculty of Science, King Mongkut's University of Technology Thonburi, Thailand, poom.kum@kmutt.ac.th
46. **Laskowski Włodzimierz**, West Pomeranian University of Technology, Szczecin, Poland, wladzimierz_laskowski@yahoo.pl
47. **Leonessa Vita**, Università della Basilicata, Italy, vita.leonessa@unibas.it
48. **Leśnik Karol**, Institute of Mathematics, Poznań University of Technology, Poznań, Poland, klesnik@vp.pl
49. **Lewicki Grzegorz**, Jagiellonian University, Kraków, Poland, grzegorz.lewicki@im.uj.edu.pl
50. **Łenski Włodzimierz**, University of Zielona Góra, Zielona Góra, Poland, W.Lenski@wmie.uz.zgora.pl
51. **Majdak Witold**, Akademia Górnictwo-Hutnicza, Kraków, Poland, witold.majdak@gmail.com
52. **Maligranda Lech**, Department of Mathematics, Luleå University of Technology, Luleå, Sweden, Lech@sm.luth.se
53. **Mantellini Ilaria**, Dipartimento di Matematica e Informatica, Università di Perugia, Italy, mantell@dipmat.unipg.it
54. **Marino Giuseppe**, Dipartimento di Matematica, Università della Calabria, Italy, gmarino@unical.it
55. **Mastyło Mieczysław**, Adam Mickiewicz University, Poznań, Poland, mastylo@amu.edu.pl
56. **Matsuoka Katsuo**, College of Economics, Nihon University, Japan, katsu@eco.nihon-u.ac.jp
57. **Meissner Joanna**, Faculty of Applied Mathematics, AGH University of Science and Technology, Kraków, Poland, meissner@wms.mat.agh.edu.pl
58. **Micek Agnieszka**, Jagiellonian University, Kraków, Poland, Agnieszka.Micek@im.uj.edu.pl
59. **Mielczarek Dominik**, AGH University of Science and Technology, Kraków, Poland,
60. **Milella Sabina**, Università degli Studi di Bari, Italy, smilella@dm.uniba.it
61. **Muglia Luigi**, Dipartimento di Matematica, Università della Calabria, Italy, muglia@mat.unical.it
62. **Musceo Graziana**, Università degli Studi di Bari, Italy, musceo@dm.uniba.it

63. **Musielak Julian**, Adam Mickiewicz University, Poznań, Poland,
64. **Myjak Józef**, University of L'Aquila, L'Aquila, Italy, and AGH University of Science and Technology, Kraków, Poland, myjakjoz@wms.math.agh.edu.pl
65. **Narloch Agata**, University of Szczecin, Szczecin, Poland,
narloch@sus.univ.szczecin.pl
66. **Nguyen Hong Thai**, Institute of Mathematics, University of Szczecin, Poland,
nguyenhthaimathuspl@yahoo.com
67. **Nowak Marian**, University of Zielona Góra, Zielona Góra, Poland,
M.Nowak@wmie.uz.zgora.pl
68. **Papini Pier Luigi**, Dipartimento di Matematica, Bologna, Italy,
papini@dm.unibo.it
69. **Pączka Dariusz**, West Pomeranian University of Technology, Szczecin, Poland,
paczka@ps.pl
70. **Pelczar Anna**, Jagiellonian University, Kraków, Poland,
Anna.Pelczar@im.uj.edu.pl
71. **Pełczyński Aleksander**, Institute of Mathematics, Polish Academy of Sciences, Warszawa, Poland, olek@impan.gov.pl
72. **Petrot Narin**, Department of Mathematics, Faculty of Science, Naresuan University, Thailand, narinp@nu.ac.th
73. **Pluciennik Ryszard**, Institute of Mathematics, Poznań University of Technology, Poznań, Poland, ryszard.pluciennik@put.poznan.pl
74. **Popov Mikhail**, Chernivtsi National University, Ukraine,
misham.popov@gmail.com
75. **Randrianantoanina Beata**, Miami University, Oxford, Ohio, USA,
76. **Rodionov Timofey**, Faculty of Mechanics and Mathematics, Lomonosov Moscow State University, Russia, t.v.rodionov@gmail.com
77. **Roszak Bogdan**, University of Zielona Góra, Zielona Góra, Poland,
B.Roszak@wmie.uz.zgora.pl
78. **Sablik Maciej**, Institute of Mathematics, Silesian University, Katowice, Poland,
mssablik@us.edu.pl
79. **Schneider Cornelia**, University of Leipzig, Germany,
schneider@math.uni-leipzig.de
80. **Shi Zhongrui**, Department of Mathematics, Shanghai University, China,
zshi@shu.edu.cn
81. **Shragin Isaak**, Germany, elinco@gmx.de
82. **Sims Brailey**, University of Newcastle, Australia, brailey.sims@newcastle.edu.au
83. **Skrzypczak Leszek**, Adam Mickiewicz University, Poznań, Poland,
lskrzyp@amu.edu.pl
84. **Smaali Mannal**, Laboratoire de Mathématiques Raphaël Salem, Université de Rouen, France, and Faculty of Sciences, Department of Mathematics, University of Tizi-Ouzou, Algeria, manel.smaali@univ-rouen.fr
85. **Suantai Suthep**, Department of Mathematics, Faculty of Science, Chiang Mai University, Thailand, scmti05@chiangmai.ac.th

86. **Szal Bogdan**, University of Zielona Góra, Zielona Góra, Poland,
B.Szal@wmie.uz.zgora.pl
87. **Szczepański Jerzy**, Jagiellonian University, Kraków, Poland,
jerzy.szczepanski@im.uj.edu.pl
88. **Szostok Tomasz**, Institute of Mathematics, Silesian University, Katowice, Poland,
szostok@ux2.math.us.edu.pl
89. **Szymaszkiewicz Lucjan**, University of Szczecin, Szczecin, Poland,
lucjansz@poczta.onet.pl
90. **Triebel Hans**, Friedrich Schiller University of Jena, Jena, Germany,
triebel@minet.uni-jena.de
91. **Vinti Gianluca**, Università di Perugia, Italy, mategian@unipg.it
92. **Wang Baoxiang**, Department of Mathematics, Peking University, Beijing, China,
wbx@math.pku.edu.cn
93. **Wang Yuwen**, Harbin Normal University, Harbin, China,
wangyuwen1950@yahoo.com.cn
94. **Wangkeeree Rabian**, Department of Mathematics, Faculty of Science, Naresuan
University, Thailand, rabianw@nu.ac.th
95. **Wattanawitoon Kriengsak**, Department of Mathematics, Faculty of Science,
King Mongkut's University of Technology Thonburi, Thailand,
s9510105@st.kmutt.ac.th
96. **Webb Jeffrey**, University of Glasgow, Scotland, j.webb@maths.gla.ac.uk
97. **Wesołowski Krzysztof**, Jagiellonian University, Kraków, Poland,
krzysztof.wesolowski@im.uj.edu.pl
98. **Właźlak Karol**, Faculty of Mathematics and Computer Science, Adam Mickiewicz
University, Poznań, Poland, karol@amu.edu.pl
99. **Wojciechowska Agnieszka**, Adam Mickiewicz University, Poznań, Poland,
awoj@amu.edu.pl
100. **Wojciechowski Michał**, Institute of Mathematics of the Polish Academy of
Sciences, Warszawa, Poland, M.Wojciechowski@impan.pl
101. **Wojtaszczyk Przemysław**, University of Warsaw, Institute of Applied Mathematics,
Poland, pwojt@mimuw.edu.pl
102. **Yang Dachun**, School of Mathematical Sciences, Beijing Normal University,
China, dcyang@bnu.edu.cn
103. **Zbąszyniak Zenon**, Institute of Mathematics, Poznań University of Technology,
Poznań, Poland, zenon.zbaszyniak@put.poznan.pl
104. **Ziemkowska Agnieszka**, Adam Mickiewicz University, Poznań, Poland,
aziemk@amu.edu.pl
105. **Zima Mirosława**, University of Rzeszów, Rzeszów, Poland,
mirazima@gmail.com