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Institute of Mathematics Polish Academy of Sciences

and

European Mathematical Society

Conference
ANALYSIS ON METRIC MEASURE SPACES

July 15 - 23, 2004

Mathematical Research and Conference Center, Będlewo

Organizers:

Bogdan Bojarski, Piotr Hajłasz Grzegorz Łysik (Warsaw) and Olli Martio (Helsinki)

Scientific Committee:

J. Cheeger, T. Couhlon, B. Franchi, P. Hajłasz,
J. Heinonen, J. K. Kinnunen, P. Koskela, M. Troyanov.

Supported by **European Commission** and **UNESCO-Roste**

The list of talks

ZOLTAN M. BALOGH (University of Bern)

Stepanov's differentiability theorem in metric measure spaces

PAWEŁ BECHLER (Polish Academy of Sciences)

Greedy wavelet projections and the spaces $BV(R^d)$

JANA BJÖRN (Linköping University)

Boundary regularity for p-harmonic functions on metric spaces

STEVE BUCKLEY (NUI Maynooth)

Sphericalization and flattening

LUIGI D'ONOFRIO (Universitá degli Studi di Napoli)

The p-harmonic transform beyond its natural domain of definition, interpolation and continuity

(joint work with Tadeusz Iwaniec)

ALEXANDER EGOROV (Sobolev Institute of Mathematics)

Stability of classes of mappings and quasiconvex functions

UTA FREIBERG (University Jena)

Analysis on fractals

NICOLA GAROFALO (Purdue University)

Minimal surfaces in Carnot groups (3 lectures)

PETER HÄSTÖ (University of Helsinki)

Arc-wise hyperbolic metrics

DARIA ISANGULOVA (Sobolev Inst. Math. SB RAS)

Differentiability of mappings between Carnot - Carathéodory spaces in BV**-topology**

IYA IVANISHKO (Belarussian State University)

Sobolev type spaces on spaces of homogeneous type: different descriptions and embedding theorems

TADEUSZ IWANIEC (Syracuse University)

Weekly differentiable mappings between manifolds

AIGERIM KALYBAY (Kazakh National University)

On properties of multiweighted spaces and their applications to singular differential equations

Maria Karmanova (Novosibirsk State University)
Area & coarea formulas on rectifiable sets in metric spaces and Sobolev mappings

Stephen Keith (Australian National University)
Differentiable structures for metric measure spaces (3 lectures)

Juha Kinnunen (University of Oulu)
Pointwise behaviour of Sobolev functions on metric spaces

Mikhail Korobkov (Sobolev Institute of Mathematics)
Stability of a class of nonsmooth Lipschitz functions

Pekka Koskela (University of Jyväskylä)
Quasiconformal mappings on metric spaces (3 lectures)

Kazuhiro Kuwae (Yokohama City University)
On Calabi's strong maximum principle via local Dirichlet forms

Valentino Magnani (Pisa University)
Blow-up and transverse mass of submanifolds in the Heisenberg group

Jan Malý (Charles University in Prague)
Fine topologies on metric spaces

Alexander Meskhi (Scuola Normale Superiore di Pisa)
Fractional integrals on nonhomogeneous spaces

Oleksandr Metelichenko (Odessa University & UCL)
Isodiametric problem in the groups with dilations

Michele Miranda (University of Lecce)
Special functions of bounded variation in metric measure spaces

Gerard Misiołek (University of Notre Dame)
Exponential map on diffeomorphism groups

Daniele Morbidelli (Universitá di Bologna)
Conformal inversions for the Grushin metric and applications to nonlinear PDEs

Jani Onninen (University of Jyväskylä)
Mappings of finite distortion

Carlos Perez (Universidad de Sevilla)
Self-improving properties of generalized Poincaré type inequalities through rearrangements

Andrei Pokrovskii (NAS Ukraine)
Removable singularities for solutions to quasilinear elliptic equations

Kai Rajala (University of Jyväskylä)
Spatial quasiregular mappings with distortion close to one

Francesco Serra Cassano (University of Trento)
Intrisic graphs and minimal surfaces in Heisenberg group

Andrzej Stós (Wrocław Technology University, CNRS-MAPMO Orleans)
Poisson kernel in hyperbolic spaces
(joint work with T. Byczkowski and P. Graczyk)

Karl-Theodor Sturm (University of Bonn)
Mass transportation and nonlinear diffusions (3 lectures)

Marc Troyanov (Ecole Polytechnique Federale de Lausanne)
Royden algebras on MMD spaces

Heli Tuominen (University of Jyväskylä)
Orlicz-Sobolev spaces on metric measure spaces

Ignacio Uriarte-Tuero (Universidad Autonoma de Madrid)
On Marcinkiewicz integrals and harmonic measure

Dachun Yang (Beijing Normal University)
Besov and Triebel-Lizorkin spaces on spaces of homogeneous type

Anna Zatorska-Goldstein (Warsaw University)
Very weak solutions of nonlinear subelliptic equations

Programme of the Conference

Thursday, July 15

16.00–22.00	ARRIVAL

Friday, July 16

Morning	Chairperson: Bogdan Bojarski
9.15–9.30	Opening: Bogdan Bojarski, Olli Martio
9.40–10:30	Juha Kinnunen (University of Oulu) **Pointwise behaviour of Sobolev functions on metric spaces**
	Tee & coffee
11.00–11.50	Carlos Perez (Universidad de Sevilla) **Self-improving properties of generalized Poincaré type inequalities through rearrangements**
12.00–12.50	Zoltan M. Balogh (University of Bern) **Stepanov's differentiability theorem in metric measure spaces**
Afternoon	Chairperson: Juha Kinnunen
15.00–15.50	Tadeusz Iwaniec (Syracuse University) **Weekly differentiable mappings between manifolds**
	Tee & coffee
16.20–16.50	Alexander Egorov (Sobolev Institute of Mathematics) **Stability of classes of mappings and quasiconvex functions**
17.00–17.30	Maria Karmanova (Novosibirsk State University) **Area & coarea formulas on rectifiable sets in metric spaces and Sobolev mappings**

Saturday, July 17

Morning	Chairperson: Tadeusz Iwaniec
9.30–10.20	Nicola Garofalo (Purdue University) **Minimal surfaces in Carnot groups, I**
	Tee & coffee
10.50–11.40	Stephen Keith (Australian National University) **Differentiable structures for metric measure spaces, I**
11.50–12.40	Kazuhiro Kuwae (Yokohama City University) **On Calabi's strong maximum principle via local Dirichlet forms**
Afternoon	Chairperson: Steve Buckley
15.00–15.50	Dachun Yang (Beijing Normal University) **Besov and Triebel-Lizorkin spaces on spaces of homogeneous type**
	Tee & coffee
16.20–16.50	Valentino Magnani (Pisa University) **Blow-up and transverse mass of submanifolds in the Heisenberg group**
17.00–17.30	Gerard Misiołek (University of Notre Dame) **Exponential map on diffeomorphism groups**
19.00–21.00	CONFERENCE DINNER

Sunday, July 18

Morning	Chairperson: Olli Martio
9.30–10.20	Nicola Garofalo (Purdue University) **Minimal surfaces in Carnot groups, II**
	Tee & coffee
10.50–11.40	Stephen Keith (Australian National University) **Differentiable structures for metric measure spaces, II**
Afternoon	
13.00–19.00	EXCURSION to Poznań

Monday, July 19

Morning	Chairperson: Zoltan Balogh
9.30–10.20	Nicola Garofalo (Purdue University) **Minimal surfaces in Carnot groups, III**
	Tee & coffee
10.50–11.40	Stephen Keith (Australian National University) **Differentiable structures for metric measure spaces, III**
11.50–12.40	Steve Buckley (NUI Maynooth) **Sphericalization and flattening**
Afternoon	Chairperson: Jana Björn
15.00–15.50	Francesco Serra Cassano (University of Trento) **Intrisic graphs and minimal surfaces in Heisenberg group**
	Tee & coffee
16.20–16.50	Jani Onninen (University of Jyväskylä) **Mappings of finite distortion**
17.00–17.30	Andrei Pokrovskii (NAS Ukraine) **Removable singularities for solutions to quasilinear elliptic equations**
17.40–18.10	Andrzej Stós (Wrocław Technology University, CNRS-MAPMO Orleans) **Poisson kernel in hyperbolic spaces** (joint work with T. Byczkowski and P. Graczyk)

Tuesday, July 20

Morning	Chairperson: Francesco Serra Cassano
9.30–10.20	Pekka Koskela (University of Jyväskylä) **Quasiconformal mappings on metric spaces, I**
	Tee & coffee
10.50–11.40	Karl-Theodor Sturm (University of Bonn) **Mass transportation and nonlinear diffusions, I**
11.50–12.40	Jan Malý (Charles University in Prague) **Fine topologies on metric spaces**
Afternoon	*Short communications, Session 1*
	Chairperson: Daniele Morbidelli
15.00–15.20	Luigi D'Onofrio (Universitá degli Studi di Napoli) **The p-harmonic transform beyond its natural domain of definition, interpolation and continuity** (joint work with Tadeusz Iwaniec)
15.25–15.45	Peter Hästö (University of Helsinki) **Arc-wise hyperbolic metrics**
15.50–16.10	Aigerim Kalybay (Kazakh National University) **On properties of multiweighted spaces and their applications to singular differential equations**
	Tee & coffee
	Short communications, Session 2
	Chairperson: Grzegorz Łysik
16.40–17.00	Alexander Meskhi (Scuola Normale Superiore di Pisa) **Fractional integrals on nonhomogeneous spaces**
17.10–17.30	Oleksandr Metelichenko (Odessa University & UCL) **Isodiametric problem in the groups with dilations**
17.40–18.00	Michele Miranda (University of Lecce) **Special functions of bounded variation in metric measure spaces**

Wednesday, July 21

Morning	Chairperson: Marc Troyanov
9.30–10:20	Pekka Koskela (University of Jyväskylä) **Quasiconformal mappings on metric spaces, II**
	Tee & coffee
10.50–11.40	Karl-Theodor Sturm (University of Bonn) **Mass transportation and nonlinear diffusions, II**
11.50–12.40	Jana Björn (Linköping University) **Boundary regularity for p-harmonic functions on metric spaces**
Afternoon	*Short communications, Session 3*
	Chairperson: Carlos Perez
15.00–15.20	Anna Zatorska-Goldstein (Warsaw University) **Very weak solutions of nonlinear subelliptic equations**
15.25–15.45	Kai Rajala (University of Jyväskylä) **Spatial quasiregular mappings with distortion close to one**
15.50–16.10	Heli Tuominen (University of Jyväskylä) **Orlicz-Sobolev spaces on metric measure spaces**
	Tee & coffee
	Short communications, Session 4
	Chairperson: Piotr Hajlasz
16.40–17.00	Ignacio Uriarte-Tuero (Universidad Autonoma de Madrid) **On Marcinkiewicz integrals and harmonic measure**
17.10–17.30	Mikhail Korobkov (Sobolev Institute of Mathematics) **Stability of a class of nonsmooth Lipschitz functions**
17.40–18.00	Uta Freiberg (University Jena) **Analysis on fractals**

Thursday, July 22

Morning	Chairperson: Jan Malý
9.30–10:20	Pekka Koskela (University of Jyväskylä) **Quasiconformal mappings on metric spaces, III**
	Tee & coffee
10.50–11.40	Karl-Theodor Sturm (University of Bonn) **Mass transportation and nonlinear diffusions, III**
11.50–12.40	Daniele Morbidelli (Universitá di Bologna) **Conformal inversions for the Grushin metric and applications to nonlinear PDEs**
Afternoon	Chairperson: Gerard Misiolek
15.00–15.50	Marc Troyanov (Ecole Polytechnique Federale de Lausanne) **Royden algebras on MMD spaces**
	Tee & coffee
	Short communications, Session 5
16.20–16.40	Paweł Bechler (Polish Academy of Sciences) **Greedy wavelet projections and the spaces** $BV(R^d)$
16.50–17.10	Iya Ivanishko (Belarussian State University) **Sobolev type spaces on spaces of homogeneous type: different descriptions and embedding theorems**
17.20–17.40	Daria Isangulova (Sobolev Inst. Math. SB RAS) **Differentiability of mappings between Carnot - Carathéodory spaces in** BV**-topology**
17.40	CLOSURE

Friday, July 23

DEPARTURE

List of participants and their e-mail addresses

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