



TO MAGNIFICO RETTORE OF UNIVERSITA' DEGLI STUDI DI MILANO

ID CODE 6788

I the undersigned asks to participate in the public selection, for qualifications and examinations, for the awarding of a type B fellowship at **Dipartimento di Matematica "Federigo Enriques"**

Scientist- in - charge: **Mattia Calzi**

[Paweł Plewa]

CURRICULUM VITAE

PERSONAL INFORMATION

Surname	Plewa
Name	Paweł

PRESENT OCCUPATION

Appointment	Structure
Assistant Professor	Wrocław University of Science and Technology (WUST)

EDUCATION AND TRAINING

Degree	Course of studies	University	year of achievement of the degree
PhD	Mathematics	WUST	2020
Master	Mathematics	WUST	2016

REGISTRATION IN PROFESSIONAL ASSOCIATIONS

Date registration	of Association	City
N/A	N/A	N/A

FOREIGN LANGUAGES

Languages	level of knowledge
Polish	Native
English	Fluent
Italian	Basic



AWARDS, ACKNOWLEDGEMENTS, SCHOLARSHIPS

Year	Description of award
2023	Start Scholarship (Foundation for Polish Science)
2021	Secundus Scientific Prize (WUST)
2021	Prize of the Rector of WUST for distinguished scientific activity.
2019,2020	Prize of the Rector of WUST for the best PhD candidates.
2016	III prize in the LVI Marcinkiewicz competition for the best student's work in mathematics.

TRAINING OR RESEARCH ACTIVITY

During the last few years I was involved in a number of projects within harmonic analysis, which resulted in joined publications in various authors. Some of these project are still ongoing and will have their continuation. Below I describe two chosen topics.

In my PhD I worked on Hardy's inequality associated with orthogonal expansions. I developed a universal and optimal method of proving such inequalities. This was done by stating a general assumptions for an orthonormal basis and a measure space, which imply the validity of Hardy's inequality in such a setting. This method was then applied to many classical orthogonal systems (e.g. Hermite, Laguerre, Jacobi, Bessel) and always resulted in sharp inequality (in the sense of the exponent appearing in the estimate).

During my stay at Politecnico di Torino I worked with A. Martini on the spectral multiplier theorems and the boundedness of Riesz transforms for the sub-Laplacians on extensions of stratified Lie groups and certain hypergroups. For a class of 2-step groups we proved a sharp multiplier theorem with a smoothness threshold equal to half of the topological dimension, whereas previously the result was known with the requirement of the half of the homogeneous dimension. Furthermore, we proved L^p boundedness of the associated Riesz transforms in the full range $1 < p < \infty$.

PROJECT ACTIVITY

Year	Project
2019-23	Principal investigator in the project PRELUDIUM (National Centre of Science of Poland)

PATENTS

Patent
N/A

CONGRESSES AND SEMINARS

Date	Title	Place
9.07.2024	Spectral multiplier theorem and Riesz transforms on solvable extensions of Bessel-Kingman hypergroups	Malaga (Spain)
11.06.2024	Riesz transforms and spectral multiplier theorem for extensions of Bessel-Kingman hypergroups	Paderborn (Germany)



29.05.2024	Spectral multiplier theorem and Riesz transforms on solvable extensions of certain stratified groups and Bessel-Kingman hypergroups	Vicenza (Italy)
10.01.2024	Sharp multiplier theorem for solvable extensions of Heisenberg type groups	Genoa (Italy)
19.01.2023	Hardy and BMO spaces on Weyl chambers	Turin (Italy)
18.10.2022	Hardy's inequality for orthogonal expansions	Turin (Italy)
21.09.2022	Hardy and BMO spaces on Weyl chambers	Wrocław (Poland)
11.01.2022	Hardy's inequality associated with orthogonal expansions	Karlsruhe (Germany)
20.10.2021	Hardy's inequality in perspective of root systems	Luminy (France)
22.05.2019	Sharp Hardy's inequality for Laguerre and Hermite expansions	Będlewo (Poland)
8.05.2018	Hardy's type inequality for Laguerre functions of Hermite type	Będlewo (Poland)
18.09.2017	Besov and Triebel-Lizorkin spaces associated with Laguerre expansions of Hermite type	Będlewo (Poland)

PUBLICATIONS

Books
N/A

Articles
A. Martini and P. Plewa, <i>A sharp multiplier theorem for solvable extensions of Heisenberg and related groups</i> , Ann. Mat. Pura Appl. 203 (2024), 1361–1408.
P. Plewa, <i>Sharp Hardy's inequality for orthogonal expansions in H^p spaces</i> , J. Fourier Anal. Appl. 30 (2024), art. no. 1.
P. Plewa and K. Stempak, <i>Hardy and BMO spaces on Weyl chambers</i> , Forum Math. 36 (2024), 245–273.
D. Kosz, M. Mirek, P. Plewa, and B. Wróbel, <i>Some remarks on dimension-free estimates for the discrete Hardy-Littlewood maximal functions</i> , Israel J. Math. 254 (2023), 1–38.
P. Plewa, <i>Sharp Hardy's type inequality for Laguerre expansions</i> , J. Math. Soc. Japan 74 (2022), 333–352.
P. Plewa, <i>Sharp Hardy's inequality for Jacobi and symmetrized Jacobi trigonometric expansions</i> , J. Approx. Theory 256 (2020), art. no. 105422.
E. Kania-Strojec, P. Plewa, and M. Preisner, <i>Local atomic decompositions for Hardy spaces</i> , Rev. Mat. Complut. 34 (2021), 409–434.
P. Plewa, <i>On Hardy's inequality for Hermite expansions</i> , Taiwanese J. Math. 24 (2020), 301–315.
P. Plewa, <i>Hardy's inequality for Laguerre expansions of Hermite type</i> , J. Fourier Anal. Appl. 25 (2019), 1855–1873.
P. Plewa, <i>Besov and Triebel-Lizorkin spaces associated with Laguerre expansions of Hermite type</i> , Acta Math. Hung. 153 (2017), 143–176.

Congress proceedings



N/A

OTHER INFORMATION

Preprints

D. Kosz, B. Langowski, M. Mirek, and P. Plewa, *Polynomial ergodic theorems in the spirit of Dunford and Zygmund*, arXiv:2304.03802 (2023)

A. Martini, P. Plewa, *Spectral multipliers and Riesz transforms on extensions of Bessel–Kingman hypergroups, and an operator-valued spectral multiplier theorem*, to appear on arxiv in 08.2024.

A. Martini, P. Plewa, *L^p -boundedness of Riesz transforms on solvable extensions of stratified groups*, to appear on arxiv in 08.2024.

Declarations given in the present curriculum must be considered released according to art. 46 and 47 of DPR n. 445/2000.

The present curriculum does not contain confidential and legal information according to art. 4, paragraph 1, points d) and e) of D.Lgs. 30.06.2003 n. 196.

Please note that CV WILL BE PUBLISHED on the University website and It is recommended that personal and sensitive data should not be included. This template is realized to satisfy the need of publication without personal and sensitive data.

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Place and date: ____Wrocław_____, ____27.08.2024____