Editors' foreword for the special issue "Mathematics in the Banach Space"

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The notion of a Banach space is one of the most fundamental notions of modern mathematics. Such spaces were named to honour Stefan Banach (1892–1945), one of the founders of Functional Analysis, who lived, worked and died in Lviv (now the largest city in western part of Ukraine). Of course, there are many important Banach spaces: spaces of sequences, functions, operators, etc.

Lviv Polytechnic University

The old building of Lviv University

Yet, there exists one very concrete Banach space, called *the* Banach space. It includes numerous historical places in Lviv related to Stefan Banach: the houses where

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Banach lived, the Lviv Polytechnical University, where Banach studied, the Lviv University where he worked, the restaurants “Roma” and “Szkocka” where Banach with colleagues discussed their mathematical ideas, the famous “Scottish book” where Banach wrote down his unsolved mathematical problems, eventually, the tomb of Stefan Banach at the Lychakiv Cemetery.

Restaurants “Roma” and “Szkocka”

Tomb of Banach at Lychakiv Cemetery

The Banach space regularly hosts international conferences dedicated to the anniversaries of Stefan Banach. The first such conference in Lviv was organised in 1982 by A.M. Plichko and V.Ya. Skorobogat’ko. The conference was dedicated to 90th birthday of Stefan Banach and 50th anniversary of his famous book *Théorie des opérations linéaires*. Then there were conferences in 1992, 2002, 2012, and 2017. This special issue contains papers inspired by the “International Conference in Functional Analysis dedicated to the 125th anniversary of Stefan Banach”, held in Lviv on 18–23 September 2017. The topics of the papers represent the Mathematics that currently is developed by mathematicians working in Lviv or collaborating with Lviv mathematicians.

Participants of the “International Conference in Functional Analysis dedicated to the 125th anniversary of Stefan Banach”, Lviv, 18–23.09.2017

The special issue has four Guest Editors taking care of papers in their fields of expertise: Taras Banakh (Topological Algebra, Real Analysis, Topology), Igor Chyzhykov (Complex Analysis), Anatolii Plichko (Functional Analysis), Valerii Samoilenko (Differential Equations and Mathematical Physics). Respectively, the papers are grouped around the following topics: **Topological Algebra** (authors: Sergii Bardyla, Oleg Gutik and Taras Mokrytskyi), **Real Analysis and General Topology** (Taras Banakh and Oleksandr Maslyuchenko, Olena Karlova and Volodymyr Mykhaylyuk, Oleksandr Maslyuchenko and Denys Onypa, Oleg Okunev and Alfredo Sánchez Jiménez, and Vladimir Tkachuk), **Categorical Topology** (Viktoria Brydun, Oleksandr Savchenko, and Mykhailo Zarichnyi), **Geometric Topology** (Taras Banakh and Olena Hryniv, Anna Kravchenko and Sergiy Maksymenko, Leonid Plachta), **Complex Analysis** (Andriy Kuryliak, Oleg Skaskiv, and Severyn Skaskiv), **Functional Analysis** (Iryna Chernega, Oleh Holubchak, Zoryana Novosad, and Andriy Zagorodnyuk, Taras Vasylyshyn, Maria Frei and Nikolai Kachanovsky), **Differential Equations** (Sergey Gefter and Aleksey Piven), and **Mathematical Physics** (Orest Artemovych, Denis Blackmore, and Anatolij Prykarpatski, Oksana Hentosh and Yarema Prykarpatsky).

The following authors of the present volume were speakers at the "International Conference in Functional Analysis dedicated to the 125th anniversary of Stefan Banach": T. Banakh, S. Bardyla, I. Chernega, O. Gutik, O. Hentosh, O. Holubchak, O. Karlova, A. Kuryliak, S. Maksymenko, O. Maslyuchenko, T. Mokrytskyi, V. Mykhaylyuk, D. Onypa, A. Prykarpatski, O. Savchenko, O. Skaskiv, T. Vasylyshyn, A. Zagorodnyuk, M. Zarichnyi. However, the submission to this issue of the EJM was not restricted to participants of the conference, and the issue does not constitute a volume of conference proceedings.

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