



3rd International Conference: Constructive Mathematical Analysis (ICCMA'25)

Tuncer Acar^a · Ioan Raşa^b

Abstract

This preface offers a detailed review of the 3rd International Conference on Constructive Mathematical Analysis (ICCMA 2025), which was organized at Selçuk University in Konya, Türkiye, between July 2 and July 5, 2025. The following sections outline the conference's primary goals, thematic breadth, and major scientific achievements. The gathering served as a significant forum for specialists and researchers in approximation theory, operator theory, and functional analysis to share groundbreaking findings. By convening these experts, the event succeeded in fostering international cooperation and advancing current discourse within the constructive mathematics community. Included in this special issue of Dolomites Research Notes on Approximation are selected papers that highlight modern developments in nonlinear analysis, constructive mathematics, and their multifaceted applications. These contributions represent the latest scientific progress presented during the conference sessions.

1 Report on the Conference

Selçuk University in Konya, Türkiye, played host to the 3rd International Conference: Constructive Mathematical Analysis (ICCMA 2025) from July 2 to July 5, 2025. This event functioned as a worldwide nexus for academic professionals, researchers, and budding scientists to disseminate new findings, swap ideas, and analyze prevailing obstacles in constructive mathematical analysis and its practical uses. With a diverse attendance of roughly 180 people from 31 different countries, the program featured 170 oral presentations alongside 8 poster sessions.

The scientific breadth of the meeting encompassed numerous subjects, notably functional analysis, approximation theory, mathematical modelling, fixed-point theory, sampling-type operators, Fourier analysis, and fractal calculus. Attendees benefited from plenary sessions led by world-class mathematicians who offered expert commentary on modern trends in analysis and its cross-disciplinary utility. The list of plenary speakers featured:

1. Prof. Francesco Altomare from University of Bari, Italy
2. Prof. Erdal Karapınar from Atılım University, Türkiye
3. Prof. Harun Karslı from Bolu Abant İzzet Baysal University, Türkiye
4. Prof. Mohammad Sal Moslehian from Ferdowsi University of Mashhad, Iran
5. Prof. Ioan Raşa from Technical University of Cluj-Napoca, Romania
6. Prof. Gianluca Vinti from University of Perugia, Italy
7. Prof. Xiaoming Wang from Eastern Institute of Technology and Missouri University of Science and Technology, China and USA
8. Prof. Ferenc Weisz from Eötvös University, Hungary

Each talk tackled current mathematical challenges, with a dual focus on fundamental theoretical breakthroughs and their tangible applications.

Held in a face-to-face format, the gathering was structured around several dedicated sessions:

- S1: Positive Approximation Processes and Applications
- S2: Approximation by Sampling type Operators and Applications
- S3: Nonlinear Analysis, Fixed Point Theory and Applications

^aDepartment of Mathematics, Selçuk University, Türkiye

^bDepartment of Mathematics, Technical University of Cluj-Napoca, Romania



S4: Fourier Analysis and Applications

S5: Fractal Calculus and its Applications

S6: All other topics in mathematics and statistics.

The conference was led by Prof. Tuncer Acar, who received essential coordination from the Scientific and Organizing Committees. Comprehensive documentation, including the final program and all abstracts, can be accessed through the conference website: <https://iccma.selcuk.edu.tr>.

2 Introducing the Special Issue

This special issue of Dolomites Research Notes on Approximation brings together a collection of research articles derived from the 3rd International Conference: Constructive Mathematical Analysis (ICCMA 2025), hosted by Selçuk University in Konya, Türkiye. By transitioning selected conference presentations into the peer-reviewed literature, these proceedings offer a formal archive of the event's core scientific themes and ensure the ongoing dissemination of its findings.

Authors who participated in ICCMA 2025 were invited to submit their manuscripts for consideration in this issue. Each submission was subjected to a stringent peer-review protocol managed by the Scientific Committee and Guest Editors. To maintain high academic standards, every paper was appraised by no fewer than two independent experts, focusing on its technical accuracy, novelty, and relevance to the conference's scope. Final acceptance was granted only to those works that fulfilled the journal's ethical and editorial requirements following the necessary revisions.

The following papers were accepted for publication in this issue:

1. Zehra Güzel Ergül, Comparison of various types of inverse soft covering upper approximations: This paper explores different inverse soft covering upper approximations, introducing a new model that is smaller than existing versions in the literature to improve decision-making under uncertainty.
2. Ismail Aydın and Ramazan Akgün, On Direct Estimates and Approximation Results by the Kantorovich Operators in Weighted Grand Lebesgue Spaces: The authors investigate the boundedness of Kantorovich operators and establish direct estimates for approximation rates using K-functionals within weighted grand Lebesgue spaces.
3. Gul Emine Canbolat, Harun Karsli, and Fatma Taşdelen Yeşildal, Convergence in the Variation Seminorm by Generalized Kantorovich-Type Szász-Mirakyan Operators Constructed via Appell Polynomials: This study analyzes the variation-detracting properties and convergence behavior of generalized operators in the space of functions of bounded variation.
4. Tuğçe Delen, An Alternative Approach to Multivalued F-Contractions in Ultrametric Spaces: This research presents new fixed point results for multivalued F-contractions and almost contractive mappings of rational type within spherically complete ultrametric spaces.

5. Fırat Öz Saraç, Büşra Şahin, and Ali Aral, On the Mellin-Gauss-Weierstrass Operators Preserving Logarithmic Functions in the Weighted Mellin-Lebesgue Spaces: The authors provide quantitative convergence results and a Voronovskaya-type theorem for generalized Mellin convolution operators that preserve logarithmic functions.
6. Alper Erdem, Ali Arpacioğlu, and Tunçay Tunç, On Semi Uniform Alpha Convergence and a Korovkin-Type Theorem: This paper introduces the concept of semi-uniform alpha convergence and explores its relationship with uniform exhaustiveness and Korovkin-type approximation theorems.
7. Akarate Singta and Wutiphol Sintunavarat, Convergence Analysis with Self-Comparative Rate Assessment of a Novel Iterative Method Based on Kirk's Iteration: The researchers perform a computational and theoretical assessment of the Kirk order-2 iteration method, identifying optimal coefficient permutations for accelerated convergence.

3 Acknowledgements

Every article in this issue has been evaluated in accordance with the rigorous editorial benchmarks of the Dolomites Research Notes on Approximation, guaranteeing academic excellence and a unified presentation of the research themes explored during ICCMA 2025.

The Guest Editors wish to extend their heartfelt appreciation to the members of the Organizing and Scientific Committees of ICCMA 2025 for their tireless work in managing the event and maintaining a high-caliber scientific agenda. We are especially grateful to the reviewers and referees; their insightful critiques and thorough evaluations played a crucial role in enhancing the scholarly quality of the manuscripts included in this collection. Additionally, we would like to recognize the professional guidance and technical assistance provided by the editorial team of Dolomites Research Notes on Approximation during the production of this volume.

Institutional and financial backing for both the conference and this special issue was generously provided by the Scientific Research Projects Coordinatorship of Selçuk University, the Scientific and Technological Research Council of Türkiye (TÜBİTAK), the Republic of Turkey Ministry of Youth and Sports, and BEYSU. We gratefully acknowledge their vital contributions to the success of this project.