

Bahçeşehir University, Istanbul, Türkiye
Analysis & PDE Center, Ghent University, Ghent, Belgium
Institute Mathematics & Math. Modeling, Almaty, Kazakhstan

“Analysis and Applied Mathematics”

Weekly Online Seminar

Seminar leaders:

Prof. Allaberen Ashyralyev (BAU, Istanbul),
Prof. Michael Ruzhansky (UGent, Ghent),
Prof. Makhmud Sadybekov (IMMM, Almaty)

Date: **Tuesday, May 27, 2025**

Time: 14.00-15.00 (Istanbul) = 13.00-14.00 (Ghent) = 16.00-17.00 (Almaty)

Zoom link: <https://us02web.zoom.us/j/6678270445?pwd=SFNmQUlVTDtRaHlDa-VYrN3I5bzJVQT09>, **Conference ID:** 667 827 0445, **Access code:** 1

Speaker:

Assoc. Prof. Dr. Arran Fernandez

Eastern Mediterranean University (Northern Cyprus) and Sultan Qaboos University (Oman)

Title: Mikusinski's operational calculus and its use in solving systems of fractional differential equations

Abstract: Mikusinski's operational calculus is a method that uses ideas from abstract algebra, specifically commutative ring theory, to understand integral and derivative operators and thence to solve differential equations. This talk will show the algebraic and analytic background to the method, some historical information, how it applies to ordinary differential equations of both integer-order and fractional types, and some recent work on applying it to coupled systems of fractional differential equations. The talk will be interdisciplinary within pure mathematics, touching on both analysis and algebra, and should be of interest to people from different fields.

Biography:

Arran Fernandez is a British mathematician who studied at Cambridge and now works in Northern Cyprus and Oman. He has been making news headlines since 2001 for his mathematical achievements at unusually young ages. Aged 5, he became the youngest person ever to pass a GCSE (British exam usually taken by 16-year-olds). Aged 15, he became the youngest Cambridge University student for over 200 years. He completed his bachelor's, master's, and doctorate at Cambridge and then, aged 23, immediately got an assistant professor position at the Eastern Mediterranean University, where he became an associate professor four years later. Currently he is on a sabbatical year at Sultan Qaboos University. His research interests are in fractional calculus, particularly its connection with other branches of pure mathemat-

ics such as analytic number theory, commutative ring theory, Clifford algebras, and hypercomplex analysis. He has published over 70 research articles and currently serves on the editorial boards of three international journals.