

Bahçeşehir University, Istanbul, Turkey
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, November 21, 2023**

Time: 12.00-13.00 (Istanbul) = 10.00-11.00 (Ghent) = 15.00-16.00 (Almaty)

Zoom link: <https://us02web.zoom.us/j/6678270445?pwd=SFNmQUlVt0tRaH-IDaVYrN3I5bzJVQT09>, **Conference ID:** 667 827 0445, **Access code:** 1

Speaker:

PhD candidate Y. Kanagatov

al-Farabi Kazakh National University, Almaty, Kazakhstan

Title: **Using adjoint equations to increase the accuracy of the fictitious domain method**

Abstract: One of the broad areas of research of computational mathematics is numerical solution of problems of mathematical physics with a curvilinear domain. One of the methods of solving such problems is finite difference method by using the fictitious domain. The fictitious domain method is a method of simplifying a geometrically complex original area by replacing the given area with a geometrically simple area, for example, a rectangle or parallelogram. In this method, the assumption is often made that the boundary condition on the fictitious boundary is equal to zero or is equal to the boundary condition on the original boundary. Thus, the fictitious domain method has the problem that the boundary condition at the original boundary is not satisfied due to an assumption. The subject of the presentation is updating this method by taking into account the boundary condition on the original boundary. For this purpose, the functional of the difference between the calculated and actual boundary condition is minimized using the adjoint equation.

Biography:

Yerkezhan Kanagatov was born in Almaty (Kazakhstan) in 1988. He obtained his BSc degree in Mathematical and Computer Modeling in 2009 at al-Farabi Kazakh National University (Almaty, Kazakhstan) and his MSc degree in Financial Mathematics in 2010 at the University of Sussex (Brighton, UK). After graduation he worked for about ten years in financial sphere and government agency. Now he is a PhD student at al-Farabi Kazakh National University. His research interests include machine learning, optimization problems, etc.