

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, December 26, 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:

Assoc. Prof. Dr. Doghonay Arjmand

Uppsala University, Sweden

Title: **Solving elliptic PDEs in infinite domains: from homogenization problems to magnetism**

Abstract: This presentation concerns recently developed methods to solve elliptic problems over infinite domains. Solving elliptic PDEs over infinite domains is relevant in various applications in mathematical sciences. A naive approach to solve these problems is to truncate the infinite domain and enforce artificial boundary conditions on the boundary of the domain. This approach, however, results in large errors due to the poor decay of the Green's function associated with elliptic operators. In this talk, we present a recently developed approach for addressing this problem in two separate contexts: homogenization problems and micro-magnetism, whereby two different theoretical set-ups emerge.

Biography:

Doghonay Arjmand is currently working as an associate professor in numerical analysis division of Uppsala University, Sweden. He has a Bachelor degree in Electrical and Electronics engineering department of Bogazici University (2008); a master degree (2010) and a PhD degree (2015) both in numerical analysis from the Royal Institute of Technology (KTH), Sweden. Thereafter, he pursued his postdoctoral research periods at Uppsala University, Sweden (2015-2017), and Ecole Polytechnique Federale de Lausanne, Switzerland (2017-2019). His scientific work spreads over various problems in applied mathematics such as homogenization problems, inverse problems, metamaterials, as well as atomistic-continuum coupling methods in micro-magnetism. He is recipient of several prestigious research grants including the starting grant from the Scientific Council of Sweden (Vetenskapsrådet), and initiation grant from STINT, Sweden.