

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, January 9, 2024**

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=SFNmQUlVTD0tRaH-IDaVYrN3I5bzJVQT09>, **Conference ID:** 667 827 0445, **Access code:** 1

### Speaker:

**Prof. Dr. Artūras Štikonas**

*Vilnius University, Vilnius, Lithuania*

### Title: **Asymptotic analysis of Sturm–Liouville problem with two-point boundary conditions**

Abstract: We analyse the initial value problem and get asymptotic expansions for solution. We investigate the characteristic equation for Sturm–Liouville problem with one classical Robin type boundary condition and another two-point nonlocal boundary condition

$$\begin{aligned} -u''(t) + q(t)u(t) &= \lambda u(t), & t \in [0,1], \\ \cos \alpha u(0) + \sin \alpha u'(0) &= 0, & \alpha \in (0, \pi), \end{aligned}$$

and another two-point Nonlocal Boundary Condition (NBC)

$$\text{(Case 1)} \quad u'(1) = \gamma u(\xi), \quad \xi \in [0,1],$$

$$\text{(Case 2)} \quad u'(1) = \gamma u'(\xi), \quad \xi \in [0,1],$$

$$\text{(Case 3)} \quad u(1) = \gamma u(\xi), \quad \xi \in [0,1],$$

where  $\gamma \in \mathbb{R}$ . Finally, we obtain asymptotic expansions for eigenvalues and eigenfunctions.

### Biography:



**Artūras Štikonas** was born in small town Utena, Lithuania. He studied in Vilnius University in 1980-1982 and Moscow State University in 1982-1986. After that, he continued his postgraduate studies in Moscow State University, supervisor: Prof. N.S.Bachvalov. In 1990 Ph.D. (Mathematics and Physics), Department of Numerical Mathematics, Academy of Science, USSR “Investigation of finite difference schemes for symmetrical viscous gas motion

equations” (Исследование разностных схем для уравнений симметрического движения вязкого газа).

In 2008 defended Habil. Proc. “Problems with Various Boundary Conditions. Mathematical Modelling, Numerical and Spectral Analysis”.

Since 1989 he worked at Numerical Analysis Department, Institute of Mathematics and Informatics, Vilnius University (1989–1993 Researcher, 1993–2008 Senior Researcher, 2009 Principal Researcher) and at Department of Differential Equations and Numerical Mathematics, Vilnius University (2007–2008 Associate Professor, 2008–2017 Professor). Since 2017 he is Professor and Research Professor at Institute of Applied Mathematics, Vilnius University.

He was visiting Professor at Vytautas Magnus University (1993–2015), Kaunas; Vilnius Gediminas Technical University (1995–2008).

Prof. Artūras research interests: Numerical methods for non-linear problems, mathematical modelling of non-linear system, problems with nonlocal conditions.

State Awards: 2017 Lithuanian Science Award. M. Sapagovas, R. Čiegis, A. Štikonas. Cycle of Scientific Works “Non-classical differential problems and their solution methods (2002–2016)”.

Editorial work: Lithuanian Mathematical Journal (Springer) Editorial Board member (since 2010); Mathematical Modelling and Analysis (Vilnius Tech) Executive Editor (since 1998); Nonlinear Analysis: Modelling and Control (Vilnius University Press) Deputy-Editor-in-Chief (since 2011) and Lietuvos matematikos rinkinys: Proceedings of The Lithuanian Mathematical Society, Editor-in-Chief (since 2021 Nov 1) (Vilnius University Press)

In 2021 elected president of the Lithuanian Society of Mathematicians.

Home page [http://uosis.mif.vu.lt/~ash/homepage/Arturas Stikonas](http://uosis.mif.vu.lt/~ash/homepage/Arturas_Stikonas)