

# Boğaziçi Math Seminar

## Large-Scale Computational Imaging: From Theory to Application

**Selin Aslan**  
**Koç University**

**Abstract:** Computational imaging is transforming the way we acquire and interpret visual data, pushing beyond the physical constraints of traditional optical systems. By leveraging advanced numerical methods and machine learning, this interdisciplinary field has enabled breakthroughs in microscopy, medical imaging, satellite remote sensing, and astronomy. Recent progress in large-scale 3D imaging has further expanded its reach, improving both resolution and robustness in challenging real-world scenarios. In this talk, I will explore key aspects of computational imaging, focusing on my recent work in tomography, phase retrieval, and image segmentation. Through these techniques, we can tackle fundamental challenges in reconstruction and interpretation, paving the way for novel applications and interdisciplinary collaborations. By examining these techniques, I will highlight ongoing challenges and opportunities for further development, fostering discussions on the future directions of imaging science.

**Date :** Wednesday, May 7, 2025

**Time:** 13:30

**Place:** TB 130, Boğaziçi University