

## *Fall 2025 Virtual Seminar Series*

### **“INTERNAL SOLITARY WAVES AND THEIR INTERACTIONS: SEAFLOOR, ICE KEELS, AND BEYOND”**

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**National Academy of Sciences of Ukraine**

**Monday, October 6, 2025  
3:30 PM EST**

**ZOOM LINK**

Meeting ID: 992 8968 4138  
Passcode: 624490

#### Abstract

Internal solitary waves (ISWs), which are large-amplitude nonlinear waves that propagate along density interfaces within stratified oceans, play an important role in mixing, transport, and the functioning of marine ecosystems. Numerical modeling of ISW demonstrates that their interactions with ice keels and underwater topography lead to turbulence, secondary wave generation, and significant energy dissipation near the ice edge and over topographic features. Results show that keel geometry and obstacle shape directly determine the magnitude of energy loss, the scale of internal boluses, and the intensity of local turbulence. Understanding these processes provides valuable insights into polar mixing mechanisms and their broader impact on global ocean circulation and climate change. Finally, I will briefly reflect on the current state of science and education in Ukraine under conditions of war, and how international collaboration sustains research and innovation.

#### Biography

Kateryna Terletska is a Doctor of Physical and Mathematical Sciences and Senior Researcher at the Institute of Mathematical Machines and Systems of the National Academy of Sciences of Ukraine. She specializes in applied mathematics and hydromechanics, focusing on modeling internal waves, their nonlinear interactions, and their impact on ocean dynamics and ice–ocean processes. She is also Head of the Applied Mathematics Laboratory at the Junior Academy of Sciences of Ukraine, where she leads projects connecting mathematical modeling with education and science communication.

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