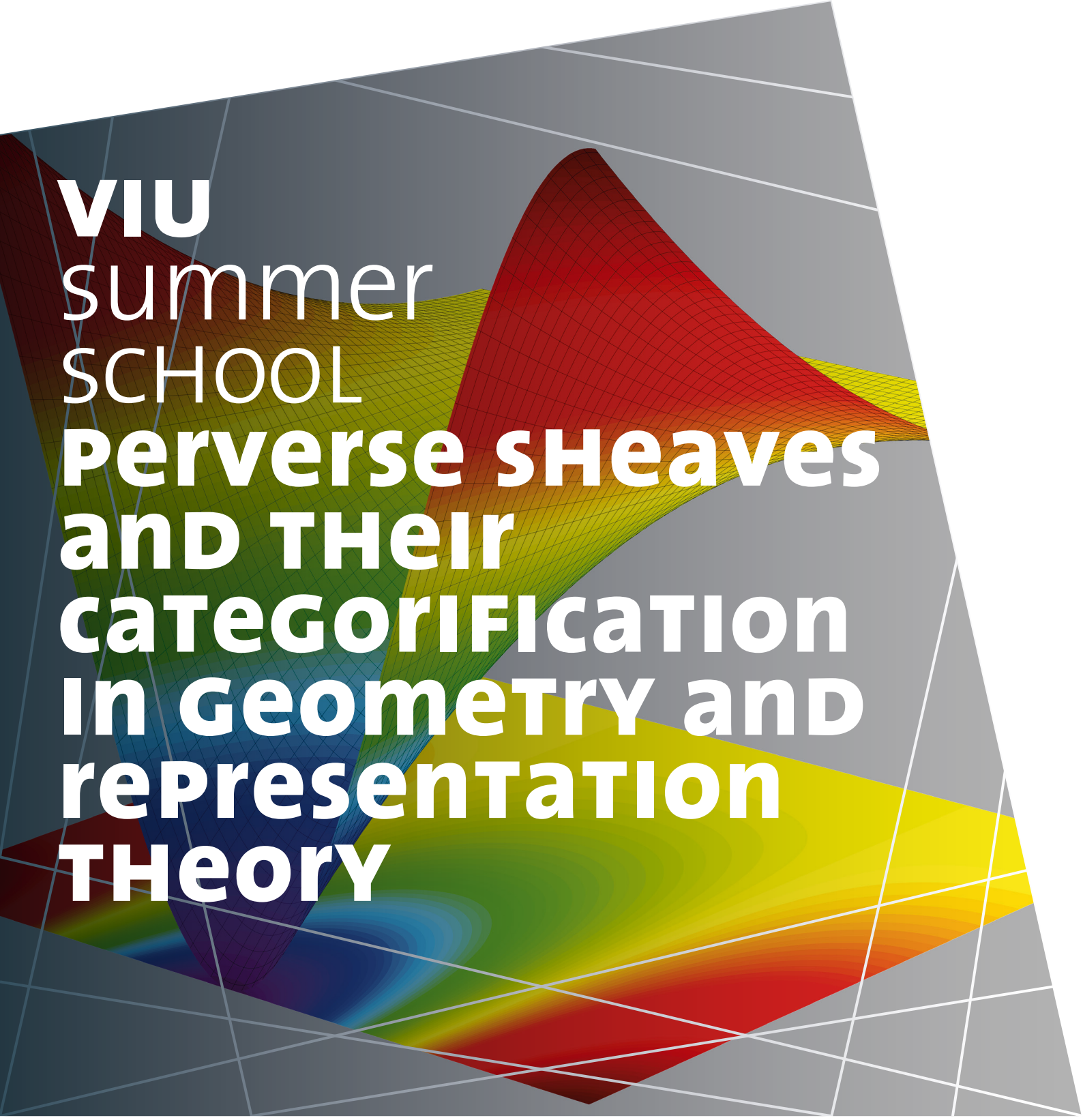

Perverse Sheaves and their Categorification in Geometry and Representation Theory

July 13-17, 2026

Venice International University
Isola di San Servolo, Venice

Venice International University

VIU Summer School

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Scientific Coordinators:

Giovanna Carnovale, University of Padova

Will Donovan, Tsinghua University

Francesco Esposito, University of Padova

Martina Lanini, University of Rome Tor Vergata

Francesco Sala, University of Pisa (Invited)

The aim of the school is to introduce graduate students working in Algebraic Geometry, Representation Theory, and Topology to perverse sheaves and their categorification (perverse schobers), and some of their recent important applications.

The use of perverse sheaves lies at the core of Geometric Representation Theory. It allowed to solve hard algebraic and representation theoretic problems by identifying suitable spaces encoding crucial information, and using them to translate the initial problem into geometric terms. Notable classical results obtained using this strategy are: generalized Springer theory, the theory of character sheaves, and the Hall algebra approach to quantum groups and canonical bases, and Kazhdan-Lusztig conjecture.

The theory of perverse schobers represents a profound advancement in higher categorical geometry and representation theory. A perverse schober is a categorification of the classical notion of a perverse sheaf, replacing sheaves of vector spaces with sheaves of categories. This framework provides a powerful tool for studying moduli problems and categorical structures in algebraic and symplectic geometry.

Perverse schobers have found diverse applications across algebraic geometry, topology, and representation theory. They have been instrumental in the study of birational geometry and derived categories, particularly in the context of flops. They also play a key role in the study of the derived categories of quotient stacks from the viewpoint of Geometric Invariant Theory (GIT), and have shown to have connections with homological mirror symmetry, Fukaya categories, and cluster theory

Faculty

Agnieszka Bodzenta-Skibińska, University of Warsaw
Merlin Christ, University of Bonn
Jens Eberhardt, University of Mainz
Francesco Esposito, University of Padova
Daniel Juteau, LAMFA UMR CNRS 7352, CNRS & Université de Picardie Jules Verne
Paul Wedrich, University of Hamburg *(tbc)*

Who is it for?
The Summer School is intended for PhD students, early postdoctoral fellows and junior researchers, working in areas related to Algebraic Geometry, Representation Theory, and Topology.

Topics
- Derived categories and perverse sheaves
- Categories of Soergel bimodules
- Spherical functors
- Perverse schobers

Learning outcomes for participants
The theory of perverse sheaves and their categorification is extremely deep and sophisticated. The school will make this rapidly developing area more accessible to the younger generation and will bring awareness to the strength's theory.

Program
The program includes introductory and advanced mini-courses, and a poster session open to all participants.

Credits
A Certificate of attendance will be issued at the end of the course.
Number of ECTS credits allocated: **2**

The Program will admit up to 30 participants.

Fees
Students of VIU member universities:
€ 100 incl. VAT.

Students of other universities:
€ 200 incl. VAT.

VIU Alumni are eligible for a reduced fee.

The fees will cover tuition, course materials, lunches in the VIU cafeteria and social events. Student participants will be responsible for covering their own travel expenses to and from Venice, accommodation and local transportation.

20 scholarships are available to cover the accommodations costs on campus (see below).

A limited number of scholarships may be available to partially cover travel costs.

Students should indicate in the application form if they wish to be considered for either of these scholarships. Additional information is available in the application form.

PhD candidates and post-docs from universities in EU universities may be eligible for Erasmus+ mobility grant support. Candidates should consult the International Office in their own university for information about the calls for applications for funding as well as for possible scholarships. VIU will provide any supporting documentation requested for such applications. Contact VIU Erasmus office: erasmus@univiu.org

Accommodation on campus
In shared rooms (triple/quadruple) with other participants: € 308 VAT included for 6 nights with breakfast (municipal tax included).

Further information is available in the application form.

Applications
December 2, 2025 – March 15, 2026
via the VIU website

Students will be notified by March 25, together with information on whether they have been awarded an accommodation on campus scholarship (if requested) and partial travel scholarship (if requested and available). They will be asked to pay the tuition fee by April 7, 2026, and the accommodation fee (if applicable).

Applicants must submit the application form, a letter of motivation – which should include a brief description of the candidate's research interests, a curriculum vitae and a photo.

Venice International University is a consortium of 23 institutions, representing 14 countries throughout the world.

The mission of VIU is to foster cooperation among VIU member institutions while facilitating the exchange of knowledge and ideas, by developing, promoting and organizing joint academic, research and training/capacity-building program. Students from non-member universities may participate in selected academic programs.

The academic programs at VIU are distinguished by a markedly interdisciplinary approach to the topics, and by the international perspectives that the participants contribute to the discussions. The VIU campus is on the island of San Servolo in Venice, Italy.

This Summer School is supported by

Yau Mathematical Sciences Center, Tsinghua University

Location

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