

3rd SARAH ADVANCED SCHOOL

7–11 September 2026

Naples, Italy



UNIVERSITY OF NAPLES
FEDERICO II

Department of Structures for
Engineering and Architecture



DIPARTIMENTO
DI ECCELLENZA
MUR

In association with the PhD programme
in *Structural & Geotechnical
Engineering and Seismic Risk*

DIRECTOR

Prof. Fulvio Parisi

University of Naples Federico II

fulvio.parisi@unina.it

DATES

7–11 September 2026

40 hours (5 ECTS)

LOCATION

*Department of Structures for
Engineering and Architecture*

Via Claudio, 21 – 80125 Naples (Italy)

Building 6, 1st floor

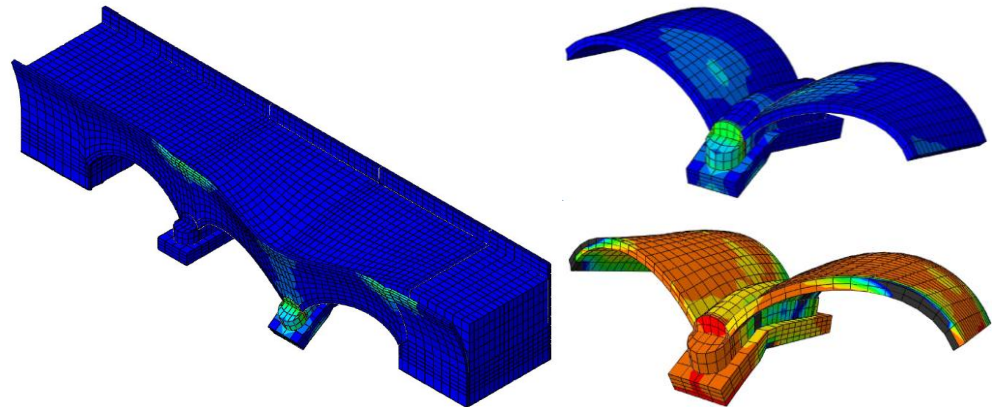
Manfredi Romano room

AUDIENCE

MSc and PhD students, post-doctoral
researchers, senior researchers,
professionals, facility managers

CONTACT

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3rd SARAH ADVANCED SCHOOL

STRUCTURAL ROBUSTNESS AND RESILIENT INFRASTRUCTURE AGAINST EXTREME HAZARDS

AIM

Civil engineering structures are increasingly subjected to extreme hazards, which are not usually considered in structural design and assessment. On one hand, such hazards have a very low probability of occurrence, and on the other, they are expected to produce huge consequences on people and property. Extreme events include but are not limited to natural events (e.g. landslides, floods, hurricanes), technological events (e.g. impact, fires, explosions), man-made events (e.g. malicious actions, human errors in design, construction or maintenance), deterioration phenomena (e.g. steel corrosion, concrete carbonation), and cascade events (e.g. natural-technological events). Climate change and strong urbanization in some areas have further exacerbated the occurrence of extreme hazards and their impact. This has significantly increased the awareness of governments and standardization bodies to develop guidelines for collapse prevention and provisions in national and international structural codes.

SARAH Advanced School aims at providing fundamentals of structural robustness, large-displacement inelastic response of structures, disaster risk and resilience of structures and infrastructures, as well as methods for structural design, assessment and retrofitting against extreme hazards.

LECTURERS

Prof. Fulvio Parisi (University of Naples Federico II, Italy) – *Director*

Prof. José M. Adam (Universidad Politécnica de Valencia, Spain)

Prof. André T. Beck (University of São Paulo, Brazil)

Prof. Robby Caspeele (Ghent University, Belgium)

Prof. Bassam Izzuddin (Imperial College London, UK)

REGISTRATION

Form online:

<https://forms.gle/9Xfnp2BeCi4319bg8>

Fees (in-person attendance):

- MSc and PhD Students: **450 €**
- Postdocs, senior researchers, professionals, companies: **600 €**

Included: lunches and coffee breaks for the 5 days of school, social dinner.

Fees (online attendance) – *not*

allowed to Federico II students:

- MSc and PhD Students: **200 €**
- Postdocs, senior researchers, professionals, companies: **350 €**

Included: synchronous/asynchronous participation in lectures and invited talks through a global online platform.

Payment:

- Mode: Bank transfer
- Recipient: Dipartimento di Strutture per l'Ingegneria e l'Architettura
- IBAN code:
IT81P0623003543000058328001
- SWIFT code: CRPPIT2P549
- Bank: Credit Agricole Italia

Deadline: 15 August 2026

VENUE

The SARAH Advanced School will be held at the University of Naples Federico II, in the Headquarters of the **Department of Structures for Engineering and Architecture (DIST)**.



DIST is a leading academic and research institution in the field of structural engineering. Rooted in a long-standing tradition of excellence, the Department builds upon the historical legacy of one of the oldest universities in Europe, founded in 1224.

DIST integrates advanced research, higher education, and technology transfer in areas such as structural

THEMATIC SPEAKERS

Dr. Luchuan Ding (Tongji University, China)

Dr. Ludovico Grieco (University of Naples Federico II, Italy)

Dr. Laura Ierimonti (University of Perugia, Italy)

Prof. Paolo Martinelli (Politecnico di Milano, Italy)

Dr. Elena Miceli (Politecnico di Torino, Italy)

Prof. Elena Michelini (University of Parma, Italy)

COURSE OUTLINE

SARAH Advanced School includes theoretical lectures, exercise classes, the analysis of real case studies and experimental tests, and thematic presentations.

The main topics of the SARAH Advanced School are listed as follows:

- Structural robustness and reliability in codes and guidelines
- Extreme events and modelling of abnormal loads on structures
- Forensic analysis of catastrophic failures
- Progressive collapse and extreme resisting mechanisms
- Reliability-based and risk-based design, assessment and retrofitting
- Computational strategies for structural response analysis under extreme conditions
- Probabilistic simulation and surrogate modelling
- Robustness quantification
- Experimental testing and structural monitoring for progressive collapse prevention
- Multi-hazard conditions and relationship between structural robustness and disaster resilience.

MAIN NOVELTIES OF SARAH 2026

- **Hybrid participation mode** to enable worldwide attendance, particularly for those facing budget constraints or travel limitations.
- **Young Researcher Sessions**, where PhD students and postdoctoral researchers will have the opportunity to present their research, receive feedback from internationally recognised experts, and discuss ideas with fellow participants working on related topics.
- A **special session dedicated to the outcomes of the national research project FAIL-SAFE**, showcasing the latest advances in structural robustness and structural health monitoring to support model development, failure diagnosis and prognosis, and disaster resilience assessment.
- **Four research talks** on different topics related to structural robustness and the disaster resilience of civil infrastructure against extreme hazards.
- **Video recordings of all lectures and presentations**, which will be made available to participants through a dedicated web platform for long-term access.
- **Presentation of some outcomes of the national research project FIRMITAS.**

COURSE SCHEDULE

Day 1 | September 7, 2026

12:30 – 13:00 | Registration of participants

13:00 – 14:30 | Welcome Lunch

14:30 – 15:00 | Parisi: Opening and presentation of SARAH Advanced School 2026

15:00 – 16:30 | Caspee: Structural robustness and reliability in codes and guidelines

16:30 – 17:00 | Coffee break

17:00 – 18:00 | Adam: Fuse-based segmentation method for robustness design

18:00 – 19:00 | Caspee: Experimental assessment of membrane action in concrete elements through large-scale testing

Day 2 | September 8, 2026

09:30 – 11:00 | Adam: Evidence from full-scale testing of concrete frame buildings

11:00 – 11:30 | Coffee break

11:30 – 13:00 | Adam: Exercises and debate on monitoring systems for local failure

mechanics, earthquake engineering, materials, and resilient infrastructure. Over the years, it has become a reference point at both national and international levels for studies on structural safety, risk assessment, and performance-based design under extreme hazards.

The **University of Naples Federico II** is the oldest non-religious university in the world. Such a university was founded by Emperor Frederick II on June 5, 1224.



PARTNERS



detection to prevent progressive collapse

13:00 – 14:30 | Lunch break

14:30 – 15:00 | *Research Talk 1* – Martinelli: Robustness of RC half-joint girder bridges: recent advances from FIRMITAS project

15:00 – 16:00 | *Technical Visit to Structural Engineering Experimental Laboratories*

16:00 – 16:30 | Coffee break

16:30 – 18:00 | *Young Researcher Session 1*

Day 3 | September 9, 2026

09:30 – 11:00 | Parisi: Progressive collapse and extreme resisting mechanisms

11:00 – 11:30 | Coffee break

11:30 – 13:00 | Parisi: Computational strategies and alternate load path analysis for robustness assessment

13:00 – 14:30 | Lunch break

14:30 – 15:00 | *Research Talk 2* – Grieco: Discontinuous modelling of PC bridges for progressive collapse analysis

15:00 – 16:00 | Parisi: Scenario-based robustness assessment of buildings and bridges

16:00 – 16:30 | Coffee break

16:30 – 18:00 | *Young Researcher Session 2*

20:00 | Social Dinner

Day 4 | September 10, 2026

09:30 – 11:00 | Izzuddin: Simplified robustness assessment framework for multi-storey buildings with application to steel-composite buildings

11:00 – 11:30 | Coffee break

11:30 – 13:00 | *Special session on the outcomes of FAIL-SAFE national research project*

Parisi: Collapse analysis and residual load-bearing capacity of masonry buildings under geohazards via applied element simulation

Michelini: Structural assessment of existing RC frames affected by settlement and corrosion

Ierimonti: Risk-informed SHM and decision support for heritage structures in urban context

13:00 – 14:30 | Lunch break

14:30 – 16:00 | Izzuddin: Tying force method: shortcomings of existing approach and recent developments

16:00 – 16:30 | Coffee break

16:30 – 18:00 | Izzuddin: Exercises on simplified robustness framework and tying force method for multi-storey buildings

Day 5 | September 11, 2026

09:30 – 11:00 | Beck: Methodologies for reliability-based and risk-based design optimization

11:00 – 11:30 | Coffee break

11:30 – 13:00 | Beck: Optimal redundancy allocation in structural systems: some fundamental results

13:00 – 14:30 | Lunch break

14:30 – 16:00 | Beck: Risk-based cost-benefit analysis of structural strengthening systems to mitigate disproportionate collapse

16:00 – 16:30 | Coffee break

16:30 – 17:00 | *Research Talk 3* – Ding: An improved global factor method incorporating PDEM for global reliability analysis of RC frame buildings against progressive collapse

17:00 – 17:30 | *Research Talk 4* – Miceli: Assessment of RC structures: uncertainties, NLNAs and Safety formats

17:30 | Closure of SARAH Advanced School 2026

SOCIAL EVENTS

A **welcome lunch** will be held at the venue of SARAH Advanced School 2026, soon after the registration of participants.

Social dinner will take place in the ancient city centre to allow participants to enjoy the history of Naples across centuries, from Greek and Roman ages till now. The venue of social dinner is [Locanda del Cerriglio](#) (historic Italian restaurant established in 1288), which is located in Via del Cerriglio 3.

OFFICIAL WEBSITE AND COMMUNICATION

Please periodically check the [dedicated webpage](#), which can be also accessed through QR code below.



Continuous information will also be delivered by the school director, Prof. Fulvio Parisi, and the Department of Structures for Engineering and Architecture, through their official websites and social media channels.

ADMINISTRATIVE STAFF

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Dr. Deborah Tomasello – detomas@unina.it

TRAVEL INFORMATION

Naples is conveniently accessible by both air and rail.

- **Air travel:** Participants travelling from abroad can fly directly to **Naples International Airport** (NAP) or connect through major European hubs with regular flights to Naples.
- **Rail travel: High-speed train services** provide fast and frequent connections between Naples and Italy's principal cities, making rail travel an efficient option for participants arriving via Rome or other Italian airports.

ACCOMODATION AND LOCAL TRANSPORTATION

We suggest participants to check accommodation availability in the proximity of the school venue (Fuorigrotta area) or downtown, preferably close to Metro lines 2 and 6 stations.

Since September is still high season in Naples, participants are encouraged to explore accommodation options as soon as possible.