

17<sup>th</sup> SIIV International Summer School

5<sup>th</sup> SIIV Arena

# Resilient road infrastructures

Climatic changes and perspective of road infrastructures

San Marino, September 16-20, 2019

**Organized by:**



**In collaboration with:**



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## Objective

SIIV (Società Italiana Infrastrutture Viarie) is an Italian scientific association that deals with road, railways and airport engineering.

In the field of transportation infrastructures, the aim of SIIV is mainly addressed to promote learning and technical-scientific knowledge, to encourage debates and to establish relationships and strategic experience exchanges with other institutions.

Working as a non-commercial association since 1990, SIIV organises technical committees, research groups, meetings and supports scientific and teaching initiatives, leading to the improvement of knowledge on transportation infrastructures.

The SIIV Summer School takes place every September as a specific event that involves and brings closely into contact the most representative leaders from the academic field and PhD students, research fellows and young researchers to facilitate exchange of skills, discussion and interaction.

## Contents

In the last decade, extreme natural phenomena have become more and more frequent, entailing a significant impact on social life. Severe natural events such as drier and hotter weather, heavier precipitations, sea level increase and fluctuations, have disrupted or got inaccessible infrastructure networks, increasing repair and management costs. Indeed, the estimation of damage on infrastructures is expected to increase significantly over time, till ten times in sixty years reaching about forty billion euros of expenses in Europe. Therefore, new complex aspects have to be considered in infrastructure design, construction, maintenance and management, shifting from historical climate data to future predictions and involving road authorities, interdisciplinary experts, investment managers, policy makers, stakeholders and suppliers.

Since road infrastructures are the most used communication facilities which drive economy and social needs of every country, this Summer School focus on new design approaches and synergies for resilient roads, taking into account hazards, exposure and vulnerability of a country to determine risks and responses related to climatic variables and uncertain weather cycles.

Lessons deal with the following main topics: climate change and risk mitigation by prediction and preventive measures, geometrical design of road infrastructures considering the effect of climate changes on surrounding areas, stability of road beds and embankments under critical conditions, resilient materials and road pavements, direct and indirect monitoring to adapt the management system to climatic factors not considered in traditional methods.

The Summer School also includes a workshop in collaboration with the Misano World Circuit Marco Simoncelli which hosts the world motorcycle championship (San Marino and Rimini Coast Gran Prix - MotoGP) every September. This year, the MotoGP is on 15<sup>th</sup> September, just one day before the opening of the Summer School. The workshop includes the presentation of the Misano circuit activities, lessons on the road superficial properties such as adherence, regularity, drainage, and high-performance materials in relationship with the specific requirements of a racing pavement.

The 17<sup>th</sup> International SIIV Summer School reserves a special session to the 5<sup>th</sup> SIIV Arena (PhD symposium) where selected PhD students and young researchers are asked to show their research topics in the field of roads, railways and airport engineering. PhD students and young researchers are also invited to send an

extended abstract by August 1<sup>st</sup> to the organising committee ([andrea.grilli@unirmsm.sm](mailto:andrea.grilli@unirmsm.sm)) that will be included in the proceedings. The scientific committee awards the best research project considering the quality of the presentation, the impact and the perspective of the research.

PhD students, research fellows and young researchers dealing with transportation infrastructure engineering are invited to attend and actively participate to the courses and workshops to favour exchange of knowledge and to stimulate new challenges and scientific achievements.

### Host location

San Marino is the most ancient Republic in Europe and has become a Unesco World Heritage site since 2008. San Marino lives of history, culture and hospitality surrounded by mediaeval architectures and green hills looking at the Adriatic Sea from the Monte Titano.

As a small State, the Republic of San Marino is identified and finds its highest potentialities in tight synergies among National Institutions, addressing its aspirations to more and more ambitious purposes even in spreading and supporting cultural events and advanced education.

The University of the Republic of San Marino and the Azienda Autonoma di Stato per i Lavori Pubblici (AASLP - National Enterprise for Public Works) are honoured to host and to collaborate with the Società Italiana Infrastrutture Viarie (SIIV – Infrastructure Italian Society) and the University of Parma for the organization of the 17<sup>th</sup> International SIIV Summer School and 5<sup>th</sup> SIIV Arena to be held in September 16-20, 2019 in the Republic of San Marino, San Marino.

The 17<sup>th</sup> International SIIV Summer School and 5<sup>th</sup> SIIV Arena will be held at the Monastero Santa Chiara located in the San Marino historic centre. The Monastero was founded in 1609 hosting nuns till 1971. Nowadays, the Monastero has been completely renewed and it is one of the facilities of the University of the Republic of San Marino.

### Venue

Università della Repubblica di San Marino, Monastero Santa Chiara, Contrada Omerelli, 20 – 47890 San Marino.

### Registration

Item	Registration [€]
Single room	750
Double room	550
SIIV association fee (to be paid by no SIIV members)	50
Accompanying person	350

The registration for Summer School participants includes accommodation, breakfast, lunch, dinner, coffee break, attendance to the Summer School and workshop, Summer School documents, organized technical and touristic activities.

The registration for accompanying persons in arrangement with a full registration includes accommodation, breakfast, dinner, organized technical and touristic activities.

Summer School Payments: go to <https://esse4web.unirmsm.sm/> or get in contact with [desd@unirmsm.sm](mailto:desd@unirmsm.sm).

SIIV association fee: the SIIV association fee has be paid by bank transfer to: ASSOCIAZIONE ITALIANA INFRASTRUTTURE VIARIE – IBAN IT 10 G 02008 05302 000401199990, SWIFT: UNCRITM1158. Reference: “Summer School 2019, SIIV membership” and the delegate’s name.




The course will be taught in English.




A certificate of attendance will be issued at the end of the course.

Please, send the registration form and extended abstract before August 1<sup>st</sup> to the following email addresses: [andrea.grilli@unirmsm.sm](mailto:andrea.grilli@unirmsm.sm).

Attendants will be accommodated at: Joli Hotel in San Marino ([www.hoteljoli.sm](http://www.hoteljoli.sm))

## Program

<b>Monday 16<sup>th</sup> September 2019</b>			
14.30 – 15.00	Registration/Reception		
15.00 – 15.30	Welcome to 17 <sup>th</sup> SIIV Summer School	San Marino Authorities, SIIV president	
15.30 – 17.30	<i>Key lecture on the effect of climate change on the Input of road design and management</i>	Prof. Maria R. De Blasiis University of Roma Tre	
18.00 – 19.30	Touristic tour to San Marino historic centre		
19.30	Welcome dinner	Ristorante Cesare, San Marino	
<b>Tuesday 17<sup>th</sup> September 2019</b>			
08.15 – 08.30	Introduction	Prof. Antonio Montepara University of Parma	
08.30 – 10.00	<i>Climate change and its impacts on transport infrastructure</i>	Eng. Domenico Gaudioso IPCC/UNFCCC methodology expert	
10.00 – 10.30	Coffee break		
10.30 – 12.00	<i>Influence of climatic changes on infrastructures design, construction and management</i>	Eng. Marco Garozzo – President PIARC CT E.1 Strategy for adaptation and resilience	
12.00 – 13.30	<i>Recycling techniques to reduce the environmental impact of road construction</i>	Prof. Kamilla Vasconcelos Savasini - University of São Paulo	
13.30 – 15.00	Lunch		
15.00 – 17.00	5 <sup>th</sup> SIIV Arena (PhD symposium)	PhD Student presentations	
20.00	Dinner	Ristorante Beccafico, San Marino	
<b>Wednesday 18<sup>th</sup> September 2019</b>			
08.15 – 08.30	Introduction	Prof. Antonio Montepara University of Parma	
08.30 – 10.00	<i>Use of procedural modelling for the enrichment of BIM models with pavement material property sets</i>	Prof. Andrej Tibaut University of Maribor	
10.00 – 10.30	Coffee break		
10.30 – 12.00	<i>Asphalt road pavements and adaptation to climatic changes</i>	Prof. Gabriele Tebaldi University of Parma	
12.00 – 13.30	<i>The use of crumb rubber modified asphalt binders in high traffic volume highways</i>	Prof. Fernando Moreno Navarro University of Granada	
13.30 – 15.00	Lunch		
20.00	Dinner	Ristorante La Fratta, San Marino	

<b>Thursday 19<sup>th</sup> September 2019 – Marco Simoncelli World Circuit</b>			
08.00	Transfer to Marco Simoncelli World Circuit (Misano)		
08.45 – 09.00	Introduction	Dr. Andrea Albani Marco Simoncelli World Circuit Managing Director	
09.00 – 10.00	<i>Characteristics and activities of the Marco Simoncelli world circuit</i>	by Marco Simoncelli World Circuit	
10.00 – 10.30	Coffee break		
10.30 – 12.30	<i>High-performance mixtures for race track wearing courses</i>	Prof. Ezio Santagata Politecnico di Torino	
12.30 – 13.30	Lunch		
13.30 – 15.00	Visit to the Marco Simoncelli World Circuit		
15.00	Transfer to hotel		
17.30	SIIV meeting		
19.30	Musical show with Emanuele Rastelli (accordion) and Diana Monaldi (soprano) in collaboration with Camerata del Titano, Piazza della Libertà, San Marino		
20.00	Gala Dinner	Ristorante Righi, San Marino	
<b>Friday 20<sup>th</sup> September 2019</b>			
09.00 – 09.30	SIIV Arena Awards	Prof. Antonio Montepara PhD. Andrea Grilli	
09.30 – 12.30	Panel discussion - Tavola rotonda	Prof. Felice A. Santagata Honorary President of SIIV  Prof. Donato Carlea President of the Superior Council of Public Works (Consiglio Superiore dei Lavori Pubblici)	
12.30 – 13.00	Closing ceremony		

Website:

[www.unirmsm.sm/summerschool2019](http://www.unirmsm.sm/summerschool2019)

### Honorary president of the scientific committee

Felice A. Santagata, Honorary President of SIIV, Italy

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#### Secretary

Andrea Grilli, University of the Republic of San Marino, Republic of San Marino

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### Registration form

Name	
Surname	
Institution	
Address	
City	
Phone	
e-mail	
Participant to "5 <sup>th</sup> SIIV Arena"	<input type="checkbox"/> YES <input type="checkbox"/> NO
Title of the presentation for "5 <sup>th</sup> SIIV Arena"	
Accommodation	Registration [€]
<input type="checkbox"/> Single room	750
<input type="checkbox"/> Double room	550
Name and Surname of the roommate	
<input type="checkbox"/> SIIV association fee (to be paid by no SIIV members)	50
<input type="checkbox"/> Accompanying person	350
Signature	

The organisation kindly request you to select the preferred menu. Special dietary requirements (food allergies, intolerances etc.) must be communicated below.

Menu
Special dietary requirements:

The registration for Summer School participants includes accommodation, breakfast, lunch, dinner, coffee break, attendance to the summer school and workshop, summer school documents, organized technical and touristic activities.

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[andrea.grilli@unirsm.sm](mailto:andrea.grilli@unirsm.sm)

Attendants will be accommodated at: Joli Hotel in San Marino ([www.hoteljoli.sm](http://www.hoteljoli.sm)).

## Getting there

### By plane

Ancona-Falconara “Raffaello Sanzio” Airport (AOI) is located about 100 km from San Marino.

Ancona-Falconara airport is connected to the Falconara Marittima railway station by bus (aerobus Raffaello <https://www.conerobus.it/en/transport/aerobus-raffaello>).

Falconara Marittima railway station is connected to Rimini railway station by regular trains ([www.trenitalia.com](http://www.trenitalia.com)).

Rimini railway station is connected to San Marino by Bonelli bus line (<https://www.bonellibus.it/en/linee/nm5b55a0348b11e5-05579130>).

Bologna "Guglielmo Marconi" Airport (BLQ) is located about 135 km from San Marino.

Bologna airport is connected to Bologna railway station by Aerobus (<https://aerobus.bo.it/en>).

Bologna railway station is connected to Rimini railway station by regular trains ([www.trenitalia.com](http://www.trenitalia.com)).

Rimini railway station is connected to San Marino by Bonelli bus line (<https://www.bonellibus.it/en/linee/nm5b55a0348b11e5-05579130>).

Milano Malpensa Airport (MXP) is located about 395 km from San Marino.

Milano Malpensa airport is connected to Milano Centrale railway station by Malpensa shuttle (<https://www.malpensashuttle.it/en/index.html>) or by train ([www.trenitalia.com](http://www.trenitalia.com)).

Milano Centrale railway station is connected to Rimini railway station by regular trains ([www.trenitalia.com](http://www.trenitalia.com)).

Rimini railway station is connected to San Marino by Bonelli bus line (<https://www.bonellibus.it/en/linee/nm5b55a0348b11e5-05579130>).

Roma Fiumicino “Leonardo da Vinci” Airport (FCO) is located about 360 km from San Marino.

Roma Fiumicino airport is connected to Roma Termini railway station by bus shuttle (<https://www.sitbusshuttle.com/en/fiumicino/>) or by train ([www.trenitalia.com](http://www.trenitalia.com)).

Roma Termini railway station is connected to Rimini railway station by regular trains ([www.trenitalia.com](http://www.trenitalia.com)).

Rimini railway station is connected to San Marino by Bonelli bus line (<https://www.bonellibus.it/en/linee/nm5b55a0348b11e5-05579130>).

By train

Rimini is the reference railway station. The trip generally takes 1 hour from Ancona, 2 hours from Bologna, 3 hours from Milano and 4 hours from Rome ([www.trenitalia.com](http://www.trenitalia.com)).

Rimini railway station is connected to San Marino by Bonelli bus line (<https://www.bonellibus.it/en/linee/nm5b55a0348b11e5-05579130>).

By car

From A14 Motorway "Autostrada Adriatica" the reference exit is "Rimini sud" tollbooth. Keep left at the crossroads, follow the direction "Repubblica di San Marino" on the Strada Statale S.S. 72 "Consolare" and go ahead to the San Marino Centro Storico (historic centre).