



10th eCAADE

REGIONAL INTERNATIONAL SYMPOSIUM

Higher Technical School of Architecture of the Basque Country
Donostia-San Sebastian (Spain)
May 23th -24th 2024

New Ways in Sustainable Materials Design in Architecture.
10th eCAADE Regional International Symposium

Higher Technical School of Architecture of the Basque Country
Donostia-San Sebastian (Spain)
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The 10th eCAADe Regional International Symposium will be held at ETSA AGET – Higher Technical School of Architecture of the University of the Basque Country, Donostia-San Sebastián, Spain on May 23th and 24th, 2024. It suppose a great opportunity to meet many of you in Spain, during two days rich of workshops, discussions, knowledge exchange and collaboration kick-offs regarding innovative approaches in the use of Sustainable Materials in Architecture supported by Computer Aided Design.

Symposium theme

New Ways in Sustainable Materials Design in Architecture

The aim of the 10th eCAADe Regional International Symposium (RIS 2024) organized at ETSA AGET is to promote innovative approaches of Computer-Aided Architectural Design to the scientific, academic, and professional communities in the Spanish region and beyond. The main objective is on the potential of computational design to help improve the use of sustainable materials in Architecture. The symposium will create connections and promote discourse between local expertises, researchers, and professionals in the field of sustainable material application, with the eCAADe and the scientific community, to develop project ideas, research, and educational collaborations.

In addition, the event will serve to promote the creation of an interconnection between architects, designers, researchers and academics in the area of Southwest Europe, for the advancement of computational design, sustainable design, simulation and the use of sustainable materials, whether these are traditional materials such as wood and its new uses and products or other types of materials, more sustainable, recyclable and reusable, which bring a new perspective in architectural design.

The Symposium is made possible by the support, grants and financial assistance of the following institutions and companies:



Universidad
del País Vasco

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SCHOOL
OF ARCHITECTURE
UNIVERSITY
OF THE BASQUE
COUNTRY

fablab **DONOSTIA** 

ESCUELA TECNICA SUPERIOR DE ARQUITECTURA - ARKITEKTURA GOI ESKOLA TEKNIKOA

eCAADe



MASTER EN ESTRUCTURAS,
CONSTRUCCIÓN Y DISEÑO
EN MADERA

UPV/EHU

caviar

calidad de vida en arquitectura
quality of life in architecture



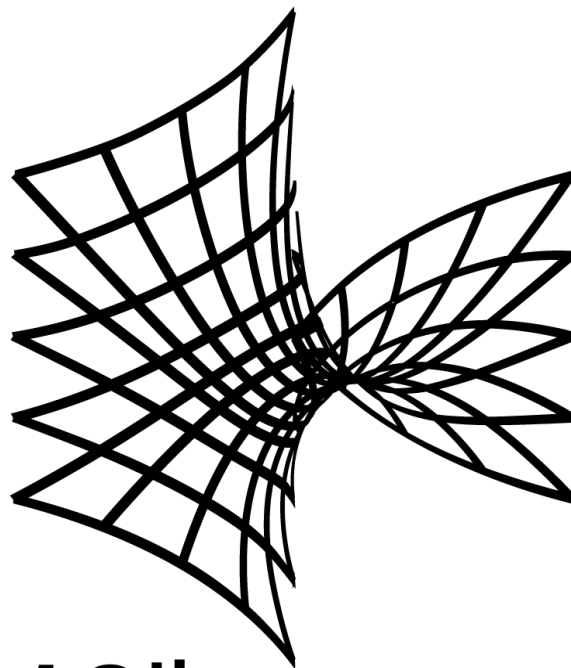
Theme

Traditionally, tectonics results from the sum of material, tools and design. Thus, tools and information have always determined how material has been used in the construction of Architecture.

In recent years, technological innovations are changing the concept, techniques and design tools with which material is treated. We can say that the use of sustainable materials is becoming a high technological concern, in terms of different types of industrial developments and products that focus on improving their mechanical, durability and fire-resistant characteristics. Similarly, instead of considering the use of sustainable materials as a design constraint, architects are taking the opportunity to create functional and aesthetically impressive designs to address environmental concerns.

The theme focuses primarily on digital graphic processes that can specifically enhance the use of sustainable materials in Architecture. Complex Shapes and Stereotomy of structural joints, the application of both new and recycled materials and the use of digitally controlled machining processes also represent an extensive field of research where the implementation of parametric tools and the use of digitally controlled machines contribute to shaping the near future of the way Architecture will be built.

The evolution from "mass production" to "mass customisation" involves the extensive implementation of digital control processes based on parametric tools and the intensive use of digitally controlled machines both during the machining and industrialisation processes and throughout the assembly and construction processes, both in new developments and in refurbishment.



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Topics

You are invited to submit papers regarding the symposium theme. Topics include, though are not limited to:

- 3D printing of sustainable buildings or building elements.
- Advanced materials and geometries in digital manufacturing.
- Biodegradable materials in digital manufacturing.
- Circular economy in digital design and manufacturing.
- Collaborative design and open source.
- Environmental impact of digital fabrication.
- Geometric approaches.
- Nature-driven design. Bio-inspired materials or applications.
- Parametric design applied to design, materials and sustainability.
- Recycling technologies in digital manufacturing.
- Regulations and standards in sustainable digital manufacturing.

Organization

The RIS 2024 will be organized by Higher Technical School of Architecture of the University of the Basque Country, Donostia-San Sebastián, hosted by Fablab Donostia.

The RIS 2024 Organizing Committee is formed by the Symposium Chairs, and the Symposium Team. In addition, the eCAADe Council will provide valuable support.

Symposium Chairs

- Francisco González Quintial, Arch. PhD. francisco.gonzalez@ehu.eus
Architect. PhD. Lecturer at ETSA-AGET. Fablab Donostia Manager.
<https://orcid.org/0000-0001-6600-6024>
<https://www.linkedin.com/in/paco-gonzalez-quintial-23279999/>
- Andrés Martín Pastor, Arch. PhD. archiamp@us.es
Architect. PhD. Lecturer at ETSIE. University of Seville.
<https://orcid.org/0000-0002-5588-2886>

Symposium Team

- Iñigo Rodríguez Vidal, Arch. PhD. inigo.rodriguez@ehu.eus
Architect. PhD. Lecturer at ETSA-AGET.
<https://orcid.org/0000-0002-5013-4846>
- Jose Miguel Rico Martínez, Arch. PhD. j.rico@ehu.eus
Architect. PhD. Lecturer at ETSA-AGET.
<https://orcid.org/0000-0002-9430-3154>

Please turn with all the questions to ris2024@ehu.eus specifying in the mail subject line if the issue is academic or non-academic.

Symposium Review Committee

Vassilis	Bourdakis	
Antonio	Fioravanti	Sapienza University of Rome
Anetta	Repczynska-Walczak	Lodz University of Technology
Joachim	Kieferle	Hochschule RheinMain
Vesna	Stojakovic	Fakultet tehnickih nauka
Rudi	Stouffs	National University of Singapore
Asterios	Agkathidis	University of Liverpool
Francesco	De Luca	Tallinn University of Technology
Sara	Eloy	Instituto Universitário de Lisboa (ISCTE-IUL), ISTAR-IUL
Tomohiro	Fukuda	Osaka University
Marco	Hemmerling	TH Köln - Cologne University of Applied Sciences
Odysseas	Kontovourkis	University of Cyprus, Department of Architecture
A. Benjamin	Spaeth	Technical University of Applied Sciences Luebeck
Armando	Trento	BIMTEGRA SRL
Andrés	Martín-Pastor	University of Seville
Francisco	González-Quintial	University of the Basque Country

Submissions

Researchers, academics, scholars, and professionals of any countries are invited to contribute to the symposium by presenting their research work. The paper submission is organized in two steps. At first, an abstract is submitted which will undergo a double-blind peer review process.

Papers publication

The accepted and presented papers will be published online in the CUMINCAD database (<https://papers.cumincad.org/>) and in the digital proceedings of the symposium. The proceedings will present also contributions by the keynote and invited speakers.

Important Dates

~~01.11.2023 – 1st call for abstracts.~~

~~15.11.2023 – 2nd call for abstracts.~~

~~15.12.2023 – Abstracts: submission deadline.~~

~~01.02.2024 – Abstracts: Notification of acceptance. Open Registration.~~

15.04.2024 – Full papers: Submission Deadline.

23.05.2024 / 24.05.2024 – Regional International Symposium (RIS)

Program

May 23th – Symposium & Workshop I

The workshops will take place at Higher Technical School of Architecture of the University of the Basque Country, Donostia-San Sebastián, hosted by Fablab Donostia.

<https://www.ehu.eus/en/web/arkitektura-eskola/en-arkitektura>

The Lectures will take place at Luis Peña Ganchegi Auditorium.

<https://www.ehu.eus/en/web/arkitektura-eskola/en-arkitektura>

08:30-9:00 – Registration and welcome

9:00-09:30 – Opening of the Symposium by Symposium Chairs

Francisco González Quintial, Arch. PhD. Lecturer at ETSA-AGET.

Andrés Martín Pastor, Arch. PhD. Lecturer at ETSIE. University of Seville.

9:30-13:30- WORKSHOP I

Eduardo Chamorro

“BIO MATERIALS. Additive Manufacturing”

WORKSHOP II.

Francisco Gonzalez-Quintial & Carlos Martínez Criado.

“DEVELOPABLE SURFACES and Lightweight Timber Structures”

The workshops will take place in parallel

11:00-11:30- Coffee break

13:30-14:30 - Lunch break

14:30-15:00 - Keynote lecture

Keynote speaker: Carlos Bañón

15:00-16:30 - Papers session 1 Moderator: Josemi Rico Martinez

16:30-18:00 - Papers session 2 Moderator: Carlos Bañón

18:30-19:30-Cocktail. Workshop Result Presentation

20:30 – Dinner

May 24th – Symposium & Workshop II

The workshops will take place at Higher Technical School of Architecture of the University of the Basque Country, Donostia-San Sebastián, hosted by Fablab Donostia.

<https://www.ehu.eus/en/web/arkitektura-eskola/en-arkitektura>

The Lectures will take place at Luis Peña Ganchegi Auditorium.

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9:30-13:30- WORKSHOP I Jose Pedro Sousa

"BENDED MORPHOLOGIES"

WORKSHOP II. Enrique Soriano & Pep Tornabell

"Modular assembly constraints in G-SHELLS."

The workshops will take place in parallel

11:00-11:30- Coffee break

13:30-14:30 - Lunch break

14:30-15:00 - Keynote lecture

Keynote speaker: Jose Pedro Sousa

15:00-16:30 - Papers session 1 Moderator: Enrique Soriano

16:30-18:00 - Papers session 2 Moderator: Eduardo Chamorro

18:30-19:30-Cocktail. Workshop Result Presentation

FEES and REGISTRATION

PAPER PRESENTATION REGISTRATION

Every accepted paper will be presented at RIS 2024. For every presentation, one presenter must register paying the fee. Accepted papers which will not have finalized the registration and will be not presented, will be not published in CuminCAD – Cumulative Index of Computer-Aided Architectural Design: <http://papers.cumincad.org/> and in the symposium publication.

Early registration fees are applicable before 10th of May, 2024. Then, **Normal registration fees** will be applied. After 20th of May, 2024, only **On-site registrations** will be possible.

	Workshop & Symposium
Event dates	23/24.05.2024
Early registration (before 20th of April, 2024)	150€
Early reduced* / BS, MS students** (before 20th of April, 2024)	50€
Early reduced* / PhD students*** (before 20th of April, 2024)	100€
Normal registration (after 20th of April, 2024)	175€
Normal reduced* / students** (after 20th of April, 2024)	75€
Normal reduced* / PhD *** (after 20th of April, 2024)	125€
On-site registration	250€

(*) The reduced fee only applicable to participants currently employed or enrolled at institutions in European countries based on the GDP: Albania, Belarus, Bosnia and Herzegovina, Bulgaria, Czech Republic, Croatia, Estonia, Greece, Hungary, Latvia, Lithuania, Malta, Moldova, Montenegro, North Macedonia, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Turkey, Ukraine.

(**) This fee applies to BSc, MSc. Registrants must provide a copy of their student ID card when registering.

(***) This fee applies to PhD. Registrants must provide a copy of their student ID card when registering.

Workshop & Symposium registration fee covers:

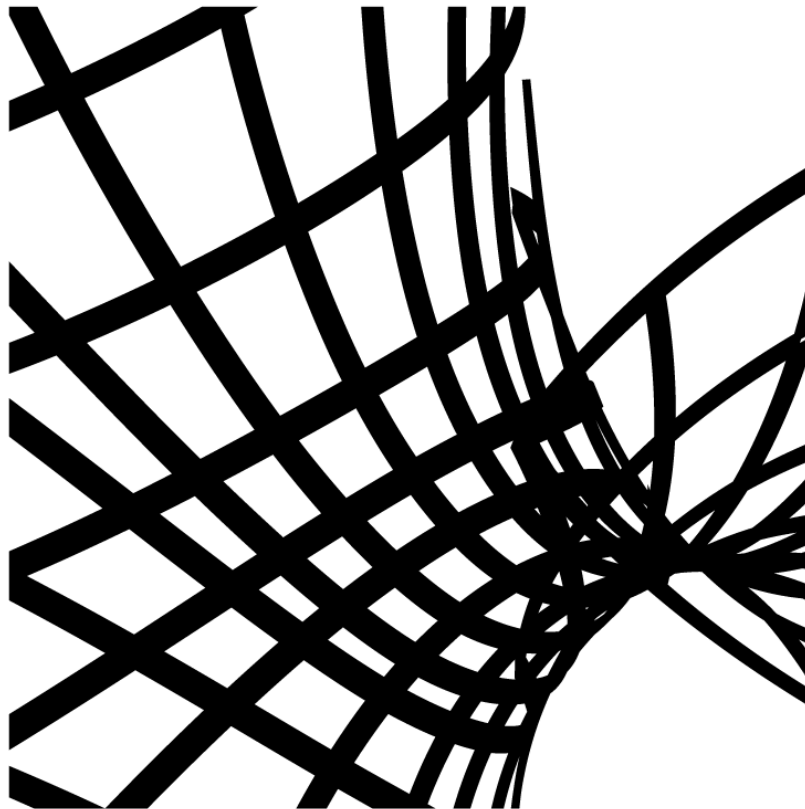
- Participation in the Workshops
- Attendance to the Lectures
- Certificate of attendance
- Workshops coffee breaks, Lunchs and final cocktails.
- Publication of one accepted paper
- Electronic copy of the proceedings and digital program of the symposium

DINNER REGISTRATION

The Symposium dinner (23th May afternoon) at a local restaurant is **included for regular registration**.

For the **Reduced Registration** there is an extra cost for the dinner (25 EUR.)

The confirmation must be sent not later than 20.05.2024.



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Hosted by Fablab Donostia.

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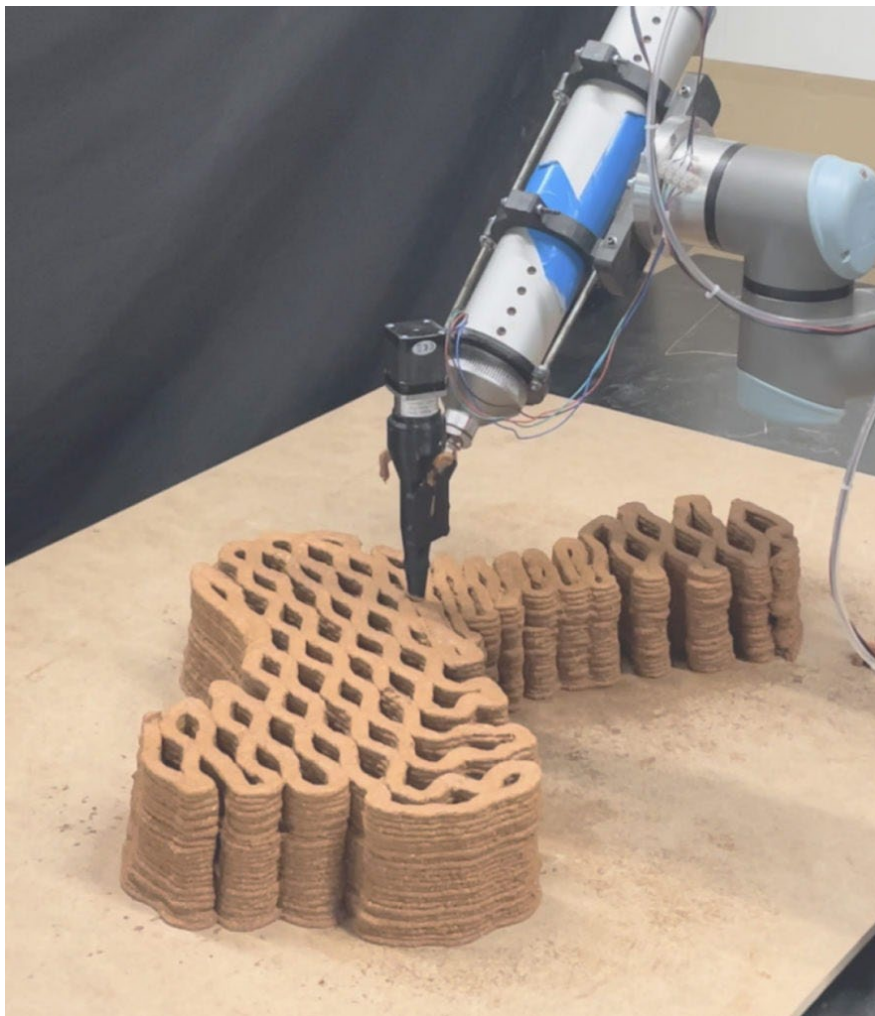
WORKSHOP I. Thursday May 23th 9:30-13:30

Eduardo Chamorro

<https://iaac.net/dt-team/eduardo-chamorro/>

“BIO MATERIALS. Additive Manufacturing”

Explore digital fabrication with sustainable materials in the 3D printing workshop, where we will create designs with biomaterials that we will create and print with an open source paste extrusion system, modifying an FDM printer.



WORKSHOP II. Thursday May 23th 9:30-13:30

Francisco Gonzalez-Quintial & Carlos Martínez-Criado.

<https://orcid.org/0000-0001-6600-6024>

<https://www.facebook.com/profile.php?id=100063558423235>

“DEVELOPABLE SURFACES and Lightweight Timber Structures”

The workshop will focus on the use of the theory of developable surfaces in the design and generation of lightweight timber structures.

It is intended to be an eminently practical workshop, where attendees will be able to understand the application of certain geometric principles and participate in the assembly of a structure/pavilion using digital fabrication systems.



Jose Pedro Sousa

https://sigarra.up.pt/faup/en/func_geral.formview?p_codigo=463797

<https://orcid.org/0000-0003-0024-4622>

WORKSHOP III. Friday May 24th 9:30-13:30

"BENDED MORPHOLOGIES"

In architecture, the use of single-curved surfaces holds significant tradition and relevance, primarily driven by the material implications inherent in this geometric approach. The advantage lies in the ability to flatten these forms without deformation, enabling their cutting from various construction materials and subsequent on-site bending and application. Embracing this geometric principle, participants are invited to engage in computer modeling during this workshop. The goal is to conceptualize a volumetric composition that capitalizes on the expressive potential of curved forms while maintaining the constructive rigor of single-curved surfaces. The practical aspect of the workshop involves the production of physical models through CNC laser cutting, showcasing the capability to bring these curved morphologies into tangible reality.



Enrique Soriano & Pep Tornabell

<https://lita.upc.edu/es/personal-1/doctorandos/enrique-soriano-botella>

<https://www.coda-office.com/>

WORKSHOP IV. Friday May 24th 9:30-13:30

“Modular assembly constraints in G-SHELLS.”

We'll work with flat collapsible elastic gridshells made out of straight planks to generate a large modular assembly.

Workshop will run with Rhinoceros 3d Grasshopper



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<https://www.uik.eus/en/activity/>

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WORKSHOP I.

Thursday May 23th 9:30-13:30



BIO

MATERIALS

Hands-on workshop on 3D printing with bio-based material formulation with an opensource 3d paste extrusion system

Eduardo Chamorro

Architect. Additive Manufacturing Expert. FabLab BCN

<https://fablabbcn.org/team/eduardo-martin>

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10th-regional-international-symposium-ecaade-2024

WORKSHOP II.

Thursday May 23th 9:30-13:30



The workshop will focus on the use of the theory of developable surfaces in the design and generation of lightweight timber structures.

Francisco Gonzalez-Quintial

PhD.Architect. FabLab DONOSTIA. ETSA-AGET_EHU-UPV

Collaborator: Carlos Martinez-Criado

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WORKSHOP III.

Friday May 24th 9:30-13:30



BENDED MORPHOLOGIES

© Geometria Construtiva (FAUP)

Participants are invited to engage in computer modeling during this workshop. The goal is to conceptualize a volumetric composition that capitalizes on the expressive potential of curved forms while maintaining the constructive rigor of single-curved surfaces.

Jose Pedro Sousa

PhD.Architect. Faculdade de Arquitectura. Universidade de Oporto

https://sigarra.up.pt/faup/en/func_geral.formview?p_codigo=463797

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WORKSHOP IV.

Friday May 24th 9:30-13:30

G-SHELLS

MODULAR ASSEMBLY CONSTRAINTS



We'll work with flat collapsible elastic gridshells made out of straight planks to generate a large modular assembly. Workshop will run with Rhinoceros 3d Grasshopper

Enrique Soriano & Pep Tornabell

Architects. CODA Office

<https://www.coda-office.com/>