



NEXUS 2025
DRAFT
CONFERENCE
PROGRAM

NEXUS CONFERENCE 2025: RELATIONSHIPS BETWEEN ARCHITECTURE AND MATHEMATICS

3-6 JUNE 2025, VICENZA (IT), PALLADIO MUSEUM



TUESDAY, 3 JUNE 2025 - MORNING

09:00-10:00 Registration

10:00-10:20 Welcome messages

Kim Williams, Kim Williams Book and Founder of Nexus

Cosimo Monteleone, Professor at Università degli Studi di Padova and Director of Nexus 2025

Guido Beltramini, Director of the Centro Internazionale di Studi di Architettura Andrea Palladio

Andrea Giordano, Professor at Università degli Studi di Padova and Dean of Civil, Environmental and Architectural Engineering Dept.

Ornella Zerlenga, Professor at the Università degli Studi della Campania Luigi Vanvitelli and President of UID (Unione Italiana Disegno)

10:20-11:00 Keynote Speakers

Palladio's Architecture and Mathematics

Guido Beltramini, Howard Burns

11:00-11:30 Coffee Break

SESSION 1 - ARCHITECTURAL ANALYSIS 1

11:30-11:55 *The Hexagon's Persistent Presence: Frank Lloyd Wright & the Architecture of Olivetti*

Kay Bea Jones

11:55-12:20 *'Inward' and 'outward' centrality in Architecture: From the Villa Rotonda to the Martin House*

Ju Hyun Lee, Michael J. Ostwald

12:20-12:45 *Rotta per casa di Dio: Dissimilation of Forms Between Aldo Rossi and Kazunari Sakamoto*

Yuji Katagiri

12:45-13:10 *"Plasticised Corners" and Other Ornaments. Secret Numbers in Carlo Scarpa's Architecture Design Theory: Mathematics as a Design Tool*

Marco Marino

13:10-14:10 Lunch



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TUESDAY, 3 JUNE 2025 - AFTERNOON

SESSION 2 - MATHEMATICS BEHIND THE DESIGN

14:10-14:35 *Mapping, Transformation, and Function as Key Concepts*

Cornelie Leopold

14:35-15:00 *Seeing Numbers in Architecture: Explicit vs Occult*

David T. Mayernik

15:00-15:25 *Gothic Anatomy: Computational Analysis of Cathedral Plans Using Branching Graphs*

Sabri Gokmen

15:25-15:50 *Formalism in Mathematics and Architecture: A Cultural Perspective*

Saeid Khaghani

15:50-16:15 *Graph Applications and Orientation for Exhibition Spaces*

Cristina Cándito, Maria F. Pacheco

16:15-16:45 Coffee Break

SESSION 3 - ARCHITECTURAL ANALYSIS 2

16:45-17:10 *Irregular Fortifications in the Treatises of Military Architecture from Late 16th to 17th Centuries: Digital Interpretation Through Geometrical Analysis and Parametric Modelling*

Marco Giorgio Bevilacqua, Roberta Spallone, Piergiuseppe Rechichi, Enrico Pupi

17:10-17:35 *Coffers Layout in the East Vault of the Temple of Venus and Rome*

Licina Aliberti

17:35-18:00 *Procedural Geometry as a Design Invariant: the Chapel of the Holy Shroud by Guarino Guarini*

Paolo Borin

18:00-18:25 *Physical and Graphic Representation of the Geometry of Girona Cathedral Using 3D Printing Tools for Scientific Dissemination*

David Moreno-Garcia, Albert Samper

18:25-18:50 *Alberti's Computation: Implementing Perspectival Transformation in Shape Machine*

James Park, Tzu-Chieh Kurt Hong

WEDNESDAY, 4 JUNE 2025 - MORNING

SESSION 4 - ALGORITHMIC DESIGN

09:00-09:25 *The Double Staircase of Palazzo Carignano: Geometric Studies Among Drawings, Survey, and Algorithmic Modelling*

Roberta Spallone, Marco Vitali, Michele Russo, Fabrizio Natta

09:25-09:50 *Algorithm-Aided Free Form Anamorphosis Design*

Francesco Di Paola, Pietro Pedone

09:50-10:15 *Algorithmic Design and Simulation of Soft Curved-folding: A Case Study with Minimally-Stretchable Sheet Goods*

Duks Koschitz, Riccardo Foschi, Rupert Maleczek

10:15-10:40 *Simulated Morphogenesis. Procedural Modelling of Gothic Architecture and Microarchitecture Using Recursive Algorithms*

Zoltán Bereczki

10:40-11:10 Coffee Break

SESSION 5 - RULE-BASED DESIGN

11:10-11:35 *Advancing Bridge Modeling Through Geometric and Relational Paradigms*

Rachele Angela Bernardello

11:35-12:00 *From Poetry to Geometry: A Procedural AI-Boosted Approach to Shape Grammar*

Paolo Clini, Ramona Quattrini, Mirco D'Alessio, Paolo Pieruccini

12:00-12:25 *Classification and Parameterization of the Oval Shape of Sports Stadiums Using Super-Ellipses*

Rodrigo Martín-Sáiz, Albert Samper, Blas Herrera

12:25-12:50 *Cymatic Ground: Modal Analysis for Responsive Architectural Design*

Alvaro Cassinelli, Tobias Klein

12:50-13:15 *Description Changes in Architecture : Identity Rules in Shape Grammars and Multiplicity in Design Datasets*

Alexandros Haridis, Nicolaos Moustroufis

13:15-14:15 Lunch



WEDNESDAY, 4 JUNE 2025 - AFTERNOON

SESSION 6 - DIDACTICS

- 14:15-14:40 *Drawing and Didactics of Mathematics. The Game of Logic by Lewis Carroll*
Valeria Menchetelli
- 14:40-15:05 *Unveiling the Potential of Historical Geometric Models and Digital Tools in the Didactics of Complex Surfaces*
Elena Guardo, Cettina Santagati, Raissa Garozzo
- 15:05-15:30 *Anamorphosis as a Teaching Tool in High Schools*
Sofia Menconero
- 15:30-15:55 *Tools and Techniques for Curves Tracing in 19th Century Techno-Scientific Culture: D. Eichberg's Ellipsograph Described by G.A. Breymann*
Laura Farroni
- 15:55-16:20 Coffee Break

SESSION 7 - PERSPECTIVE AND PROJECTION

- 16:20-16:45 *Serlian Ovals and Cosmic Representation*
Nick M. L. Mols
- 16:45-17:10 *Visual Interplays between East and West: Andrea Pozzo's Legacy in China*
Matteo Flavio Mancini
- 17:10-17:35 *Modus reticulationis faciendae: The Practice of Projections in the Theoretical Work of Andrea Pozzo*
Leonardo Baglioni, Marta Salvatore
- 17:35-18:00 *The Origin of Mathematical Perspective, Mathematically Reconsidered: Masaccio's Holy Trinity*
Michael Coleman Duddy
- 18:00-18:25 *Relief Perspective Realized through 3D Printing*
Dana Kolářová

THURSDAY, 5 JUNE 2025 - MORNING

SESSION 8 - SURVEYS AND MODELS

09:00-09:25 *Can Digital Surveys Expose Construction Details? The Tile Mosaic Dome of the Karatay Madrasah*

Mine Özkar, Sibel Yasemin Özgan, Demircan Taş

09:25-09:50 *An Open-Source Solution for Fast and Informative Modelling of Churches*

Mara Capone, Simona Scandurra, Gianluca Barile

09:50-10:15 *Eidetic and Measurability of Antiquities with Digital Tools*

Andrea Giordano, Assunta Pelliccio, Marco Saccucci

10:15-10:40 *From Monastic Rule to Geometric Rules: A Semantic-Topological Approach to the Analysis of Religious Architecture*

Valeria Cera, Giuseppe Antuono

10:40-11:10 Coffee Break

SESSION 9 - URBAN DESIGN

11:10-11:35 *Calvino's Invisible Cities – Mathematical Structures in Cyberspace*

Michela Rossi, Giorgio Buratti, Sara Conte, Cecilia Santacroce, Giorgia Sforzi

11:35-12:00 *Geometrical Layout and Project for Taranta Agri-Camping at Melpignano*

Alessandra Capanna, Giampiero Mele

12:00-12:25 *Unveiling the Landscape. Theoretical Knowledge and Procedures in the Representation of Portuguese Cities.*

João Cabeleira

12:25-12:50 *From patterns to planning: modern mathematical models for the design of adaptive cities*

Francesco Rossi, Irene Cazzaro

12:50-13:50 Lunch

THURSDAY, 5 JUNE 2025 - AFTERNOON

SESSION 10 - STRUCTURES

13:50-14:15 *Form and Construction in Byzantine Brick Cross Vaults*

**Ana López-Mozo, Enrique Rabasa-Díaz, Miguel Á. Alonso-Rodríguez,
Alberto Sanjurjo-Álvarez**

14:15-14:40 *Projection and Mathematics in the Paperless Construction of Timber Structures*

Adam Brillhart

14:40-15:05 *A Design of an Ideal Roof with a Horizontal Rotational Axis*

Rafael López

15:05-15:30 *Tracing for Tile Vaults Constructions Between Tradition and Advanced Technologies*

Alessio Bortot

15:30-16:00 Coffee Break

SESSION 11 - GEOMETRIC DESIGN

16:00-16:25 *The Icosihexahedron Pacioli Described, whose science will be very useful in many aspects, especially for those who put it to good use in architecture*

Vera Viana

16:25-16:50 *Simplicity in Complexity: Fabricating Extended Polyhedra for Digital and Geometric Art*

**Felicia Wagiri, Ye-Yint Aung, Kevin Harsono, Milena Stavric,
Shen-Guan Shih**

16:50-17:15 *The Rhombicuboctahedron as a Form for Housing*

Michael Jen

17:15-17:40 *Digital Kaleidoscope. Parametric Kaleidoscopic Patterns Design*

Enrico Cicalò, Michele Valentino, Andrea Sias

17:40-18:05 *Muqarnas: Weavings of a Long History Between Geometry and Matter*

Marinella Arena, Salah Hajismail, Sonia Mercurio

19:30-20:30 Palladio Museum, Light supper

21:00 Olympic Theatre, Johannes Brahms, *Hungarian Dances*

Piano Four Hands: **Stefania Redaelli, Maria Grazia Bellocchio**



FRIDAY, 6 JUNE 2025 - MORNING

SESSION 12 - RECONSTRUCTION AND MODELLING

09:00-09:25 *The numerical matrix in Samonà's architecture in Messina. From geometry to visual modeling*

Sonia Mollica, Paola Raffa

09:25-09:50 *Geometries and Hidden Traces. The Digital Reconstruction of the Medieval Monastery of San Giorgio Maggiore in Venice*

Gianmario Guidarelli, Gabriella Liva, Sara Bini

09:50-10:15 *Memory of the Venetian Baroque scene. Reconstruction of the San Giovanni. Grisostomo Theatre.*

Roberta Ena

10:15-10:40 *The Representation of Architecture in the Fresco Cycle in Santa Maria in Sylvis in Sesto a Reghena*

Isabella Friso

10:40-11:10 Coffee Break

SESSION 9 - Ph.D. PRESENTATIONS

11:10-11:35 *Andrea Mantegna's Bridal Chamber from perspective illusionism to digital innovation*

Mara Gallo

11:35-12:00 *"Ambrogetta". The geometries of sicilian tradition*

Luciano Marino, Giuseppina Crea

12:00-12:25 *Mathematization and Initial Exploratory Movements of Cybernetics in Spatial Planning*

Marlon James Brownsword

12:25-13:25 Lunch

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FRIDAY, 6 JUNE 2025 - AFTERNOON

13:50 **TOURISTIC TOUR**

Basilica Palladiana

The Church of Santa Corona

Civic Art Gallery of Palazzo Chiericati

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