

# ABOUT THE CONFERENCE OFFICIAL ANNOUNCEMENT

We are glad to announce that ICGG 2018, the 18th International Conference on Geometry and Graphics, will be held at the Politecnico di Milano on August 3-7, 2018. It will start with Opening Ceremony at the Triennale di Milano, and will end with Closing Ceremony at the Museo Nazionale della Scienza e della Tecnologia Leonardo da Vinci. The Conference is organized biannually at different venues around the world, under the auspices of the International Society for Geometry and Graphics (ISGG). The spectrum ranges from fundamental research to geometric real-world applications, and education. Therefore, the conference aims at providing a forum for presentation and discussion of both academic and industrial research involving theoretical and applied geometry and graphics as well as other related fields.

The 18th edition is organized at the Politecnico di Milano, by the Department of Architecture and Urban Studies DASTU. Politecnico di Milano is an academic community dealing with Architecture, Urban Studies, Engineering, and Design, then the Conference scope is deeply consistent with its cultural goals. Pure and applied, analogue and digital Geometry and Graphics are, indeed, of the greatest importance in our research/education activities and curricula, providing our basic operational language and supporting our specialized disciplinary semantics.

The official language is English.

Conference webpage: [www.icgg2018.polimi.it](http://www.icgg2018.polimi.it)

## DEDICATION AND LOGO

As also the Conference Logo tries to synthesize, we liked to dedicate this conference to Leonardo Da Vinci, genius among the greatest showing the widest power of Geometry and Graphics in investigation and creativity between Science and Art, and to Giulio Natta, professor at the Politecnico di Milano and Nobel prizewinner in Chemistry in 1963, together with Karl Ziegler, as a mentor on the profound function - and beauty! - of Geometry and Graphics in Science and Technology, even at the invisible scale of the molecular world.

In the graphic synthesis of the logo, starting from a spatial version of the Leonardo's *homo ad circumum* diagram, the sphere (symbolizing the macro cosmos) appears covered by a molecular pattern inspired by the Natta's isotactic polypropylene and inscribed inside an ideally cubic frame (symbolizing the micro cosmos), and the outline of the *homo* (the man) meets the two mentioned structures at the base, where the first carbon atom of the chain is located, as a metaphor of the basic brick of organic life, while due to the designated viewpoint the overall outline of the logo alludes to the letter "M" of Milan.

**DEDICATION AND LOGO AIM AT REMARKING THE WIDE SPECTRUM OF THE SCIENTIFIC FOCUS OF THE CONFERENCE, AND THE IDENTITY OF THE 2018 EDITION**

### About the Conference Logo

**Concept and Design:** Luigi Cocchiarella

**Digital Parameterization and Animation:** Matteo Cavaglia

**Digital Branding:** Umberto Tolino and Andrea Manciaracina



MILANO  
ICGG  
2018

AUGUST 3<sup>RD</sup> TO 7<sup>TH</sup>

# CONFERENCE ORGANIZATION

## COMMITTEE

### HONORARY CHAIRS

#### Otto Röschel

*Outgoing President of the International Society for Geometry and Graphics – ISGG, Graz University of Technology, Austria*

#### Vito Cardone

*President in office of the Unione Italiana Disegno – UID, Università degli Studi di Salerno, Italy*

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#### Ema Jurkin

*ISGG Vice- President for Europe/Near East/Africa, University of Zagreb, Croatia*

#### Aura Conci

*ISGG Vice- President for North America/South America, Universidade Federal Fluminense, Niterói, Brazil*

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#### Kenjiro Suzuki

*Former ISGG President, Professor Emeritus, The University of Tokyo, Japan*

#### Emiko Tsutsumi

*Former ISGG President, Otsuma Women's University, Tokyo, Japan*

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*Former ISGG Director, TU Kaiserslautern, Germany*

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*Editor in Chief of the Journal for Geometry and Graphics – JGG, University of Technology Vienna, Austria*

#### Gunter Weiss

*Former ISGG President, Technical University of Dresden, Germany*

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#### Michael Manevich

*Ariel University Center of Samaria, Israel*

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*Joshibi University of Art and Design, Tokyo, Japan*

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*Beijing Institute of Technology, China*

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*Universidad de Jaén, Spain*

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*Università Cattolica del Sacro Cuore*

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*Politecnico di Milano*

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*Università degli Studi della Campania Luigi Vanvitelli*

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*Politecnico di Milano*

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*Politecnico di Milano*

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*Università degli Studi Roma Tre*

#### Graziano Mario Valenti

*Università degli Studi di Roma La Sapienza*

#### Maurizio Stefano Vianello

*Politecnico di Milano*

## ORGANIZING BOARD AT POLITECNICO DI MILANO

#### Giuseppe Amoroso, Raffaele Ardito, Alessandro

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**Cecilia Maria Bolognesi, Giuliana Cardani, Camilla**

**Casonato, Flavio Cavaglià,**

**Claudio Umberto Comi, Dario Angelo Maria Coronelli,**

**Carlo De Falco, Nicole De Togni,**

**Damiano Cosimo Iacobone, Maria Pompeiana Iarossi,**

**Paola Magnaghi Delfino,**

**Giampiero Mele, Marco Muscogiuri, Tullia Norando,**

**Daniela Oreni, Daniele Giovanni Papi,**

**Barbara Ester Adele Piga, Matteo Giuseppe**

**Romanato, Tan Shilong, Daniele Villa**

## STAFF AND OFFICES

**Cristina Giannetto** Communication Staff

**Gianluca Ferrante** Administration and Accounting Staff –

DASTU

**Gloria Paoluzzi** Department Manager – DASTU

**Susanna Sancassani** Support Service for Research and

Innovation Didactics – METID

## CONFERENCE WEBPAGE AND BRANDING

**Andrea Manciaracina,** Politecnico di Milano

**Umberto Tolino,** Politecnico di Milano

## GRANT

ICGG 2018 has been granted by the Department of

Architecture and Urban Studies (DASTU). Department

Head, **prof. Gabriele Pasqui**

# OVERALL PROGRAM

TIME	AUG 3 – FRI Triennale di Milano Design Museum	AUG 4 – SAT Politecnico di Milano	AUG 5 – SUN Politecnico di Milano	AUG 6 – MON Politecnico di Milano	AUG 7 – TUE Museo Leonardo da Vinci
08:40 09:00		DESK OPENING	DESK OPENING	DESK OPENING	DESK OPENING
09:00 09:40		PLENARY ISGG INVITED LECTURE	PLENARY ISGG INVITED LECTURE	PLENARY ISGG INVITED LECTURE	CLOSING PLENARY RELOADING GEOMETRY AND GRAPHICS A GLANCE TO THE FUTURE
09:40 10:00		PLENARY POSTER SESSION	PLENARY POSTER SESSION	PLENARY POSTER SESSION	PANEL SESSION
10:00 10:20		BREAK	BREAK	BREAK	BREAK
10:20 12:00		TS TECHNICAL SESSIONS (T) (I) (C) (E) (H) (A) (A)	TS TECHNICAL SESSIONS (T) (I) (E) (H) (H) (A)	TS TECHNICAL SESSIONS (T) (I) (C) (E) (H) (A) (A)	PLENARY CLOSING CEREMONY
(11:40-12:00)			PLENARY TS REPORT		
12:00 13:40		LUNCH	LUNCH	LUNCH	
13:40 15:00	REGISTRATION & CONFERENCE OPENING	TS TECHNICAL SESSIONS (T) (E) (C) (E) (H) (A) (A)	APT	TS TECHNICAL SESSIONS (T) (E) (C) (E) (H) (A) (A)	LEAVE-TAKING SNACK
15:00 15:20	VISIT TO THE TRIENNALE MILANO DESIGN MUSEUM	BREAK	ACCOMPANYING PERSONS' TOUR	ACCOMPANYING PERSONS' TOUR	
15:20 16:20		TS TECHNICAL SESSIONS (A) (A) (C) (E) (H) (A) (A)	40 YEARS OF GEOMETRY AND GRAPHICS & ICGG 2018 POSTERS ON SHOW	TS TECHNICAL SESSIONS (A) (A) (C) (E) (H) (A) (A)	FREE VISIT TO THE MUSEUM
16:20 16:40	OPENING PLENARY	BREAK	EXCURSION	BREAK	
16:40 18:00	EULOGY OF GEOMETRY AND GRAPHICS INVITED GUESTS LECTURES	PLENARY TS REPORT PLENARY INVITED GUEST LECTURE	FREE EVENING	PLENARY TS REPORT PLENARY INVITED GUEST LECTURE	
18:00 20:30	CONFERENCE PICTURE & WELCOMING PARTY	ISGG BOARD MEETING UNTIL 22:30		CONFERENCE DINNER UNTIL 23:30	

## CONFERENCE TOPICS

- (T) Theoretical Graphics and Geometry**
- (A) Applied Geometry and Graphics**
- (C) Engineering Computer Graphics**
- (E) Graphics Education**
- (H) Geometry and Graphics in History**

## “LAST SUPPER”

### EXTRA PROGRAM

(LIMITED PLACES AVAILABLE)

Due to the enormous requests from people and travel agencies from all over the world, the visit to the “Last supper” for the ICGG2018 participants is offered according to the following schedule:

**AUGUST 3 2018 at 13:00**

**AUGUST 4 2018 at 12:15**

**AUGUST 4 2018 at 18:45**

**AUGUST 5 2018 at 08:15**

**AUGUST 7 2018 at 13:30**

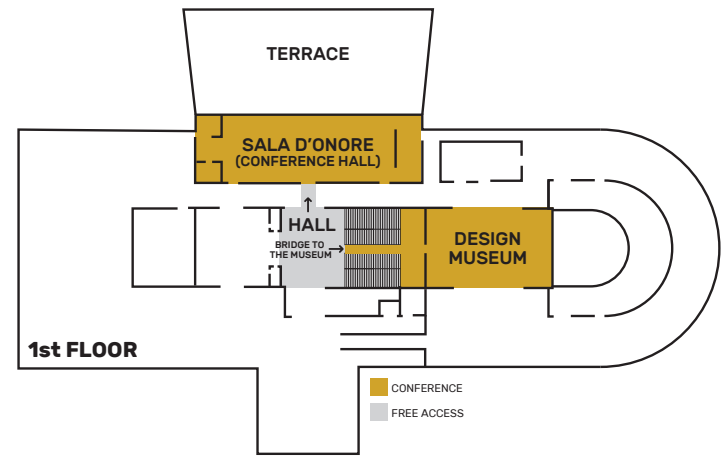
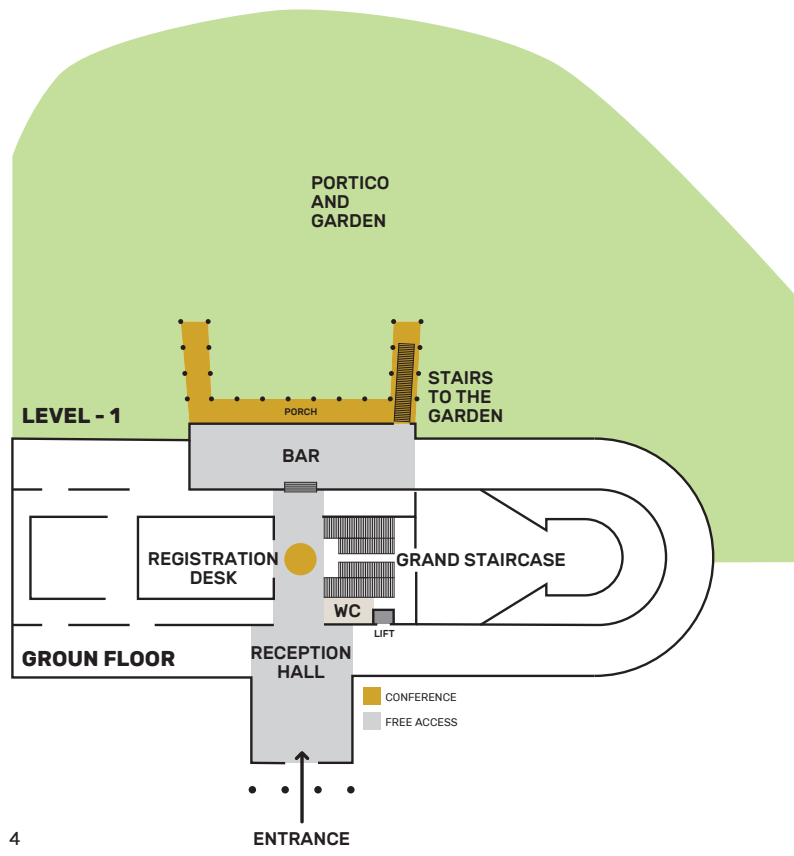
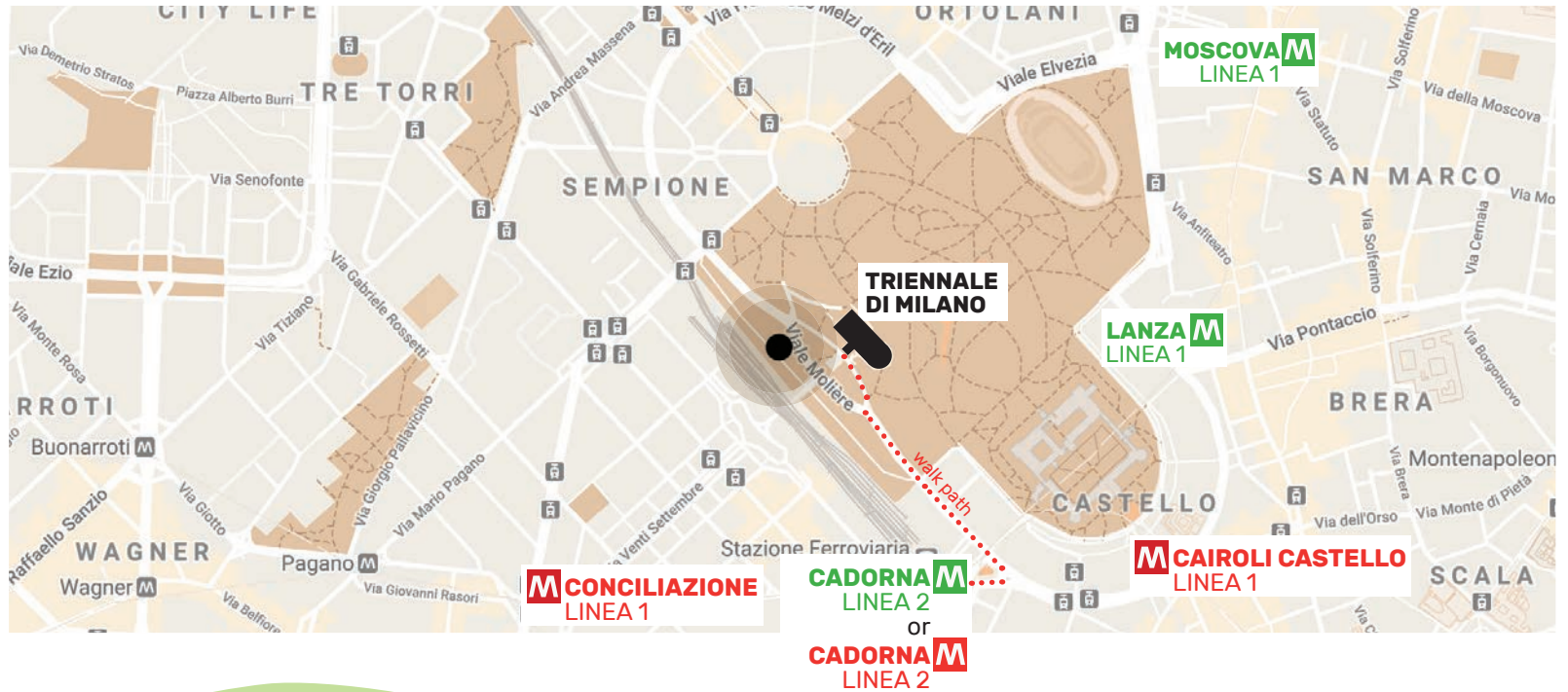
Meeting point: Church of S. Maria delle Grazie,  
30 min. before the visit starts

## AUGUST 5 2018 afternoon

A visit to the Last Supper is also included in the  
Conference Tour on August 5 afternoon

# CONFERENCE VENUE - AUGUST 3 2018

## TRIENNALE DI MILANO DESIGN MUSEUM



TRIENNALE DI MILANO DESIGN MUSEUM



ICGG

40<sup>TH</sup> ANNIVERSARY

LAST SUPPER EXTRA PROGRAM  
13:00

REGISTRATION DESK  
RECEPTION HALL - GROUND FLOOR  
VISIT TO THE TRIENNALE DESIGN MUSEUM  
1ST FLOOR

13:40 – 16:20

OPENING CEREMONY

SALONE D'ONORE - 1st FLOOR  
"EULOGY OF GEOMETRY AND GRAPHICS"

16:20 – 18:00

Call to Order and Early Intro to ICGG2018

Luigi COCCHIARELLA  
Executive Conference Chairman  
[Italy]

Official Opening of the Conference

Yasushi YAMAGUCHI  
President of ISGG and Conference Chairman  
[Japan]

Otto RÖSCHEL  
Former President of ISGG and Honorary Conference Chairman  
[Austria]

Vito CARDONE  
President of UID and Honorary Conference Chairman  
[Italy]

Welcome Addresses from the Politecnico di Milano

Ferruccio RESTA  
Rector of the Politecnico di Milano  
[Italy]

Gabriele PASQUI  
Head of the Department  
of Architecture and Urban  
Studies - DASTU  
[Italy]

Ilaria VALENTE  
Dean of the School of Architecture  
Urban Planning Construction  
Engineering - AUIC  
[Italy]

Rossella SALERNO  
Coordinator of the  
Unit of Graphic  
Representation - DASTU, AUIC  
[Italy]

Special Addresses for the 40<sup>th</sup> Anniversary

Regions North America / South America  
Frank M. CROFT  
ICGG2018 Steering Committee  
[United States]

Regions Europe / Near East / Africa  
Hellmuth STACHEL  
Managing Editor of the Journal  
for Geometry and Graphics - JGG  
[Austria]

Regions Asia / Australia / Oceania  
Kenjiro SUZUKI  
Former President of ISGG  
[Japan]

INVITED LECTURES

Session Co-Chairs

Damiano IACOBONE  
[Italy]

Gunter WEISS  
[Austria]

#ILO01

Rational Estimates for Irrational Problems:  
Proportional Geometry in the Work of Leonardo da Vinci

Mathew LANDRUS  
University of Oxford, Oxford  
[United Kingdom]

Session Co-Chairs

Ema JURKIN  
[Croatia]

Daniela VELICHOVÁ  
[Slovakia]

#ILO02

Molecular Geometry and Molecular Graphics:  
Natta's Polypropylene and Beyond

Guido RAOS  
Politecnico di Milano, Milano  
[Italy]

Thanks for the welcome  
messages sent, to:

Hirokazu ABE  
President of the Japan Society  
for Graphic Science - JSGS  
[Japan]

Robert A. CHIN  
Chair of EDGD, Engineering graphic  
division of the American Society  
for Engineering Education - ASEE  
[United States]

Santa J. ONO  
President and Vice-Chancellor of the  
University of British Columbia - UBC  
[Canada]

Cristina TAJANI  
Councillor for Labour Policies,  
Business, Commerce and Human  
Resources - Municipality of Milan  
[Italy]

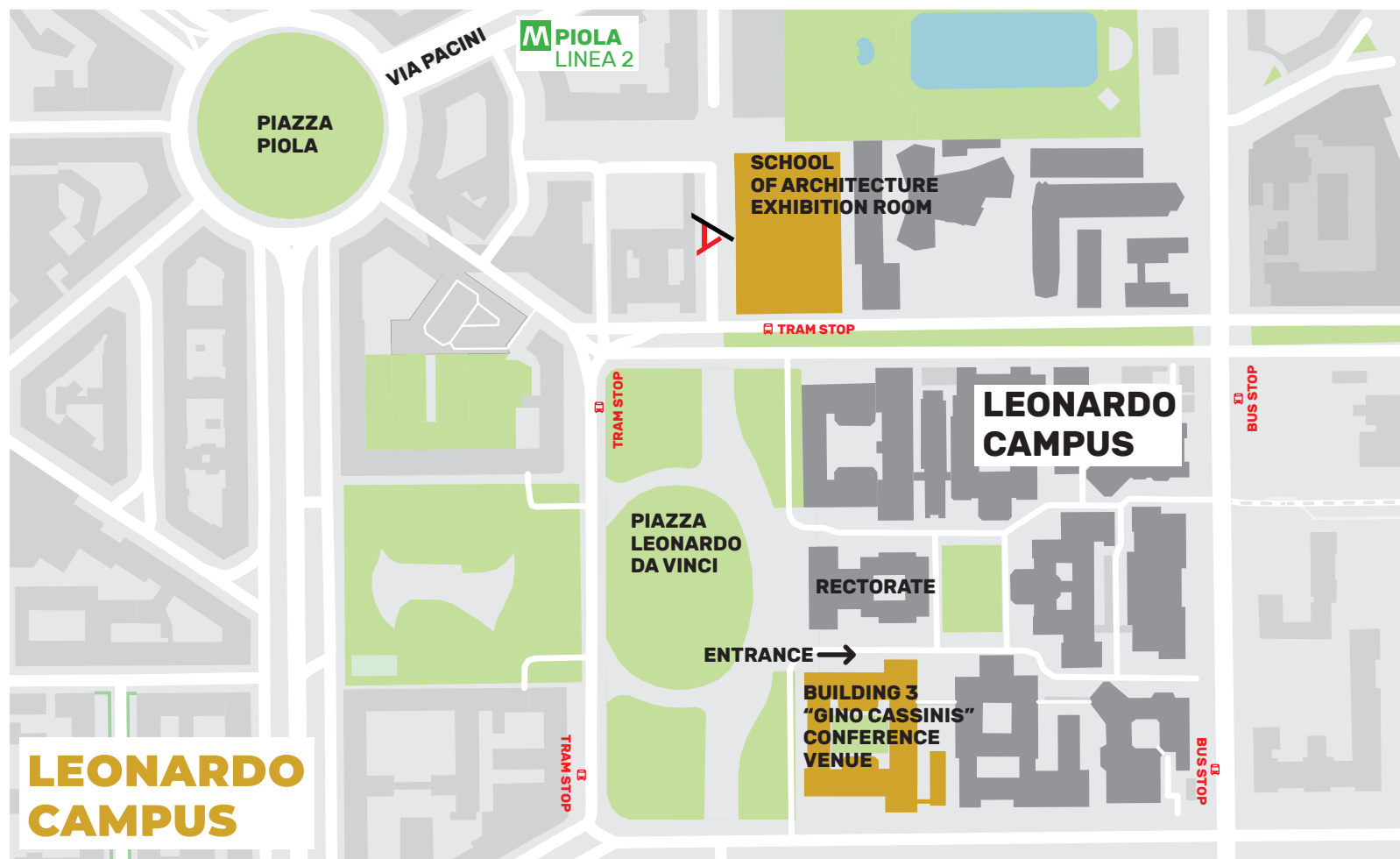
CONFERENCE PICTURE - GRAND STAIRCASE

WELCOMING PARTY - GARDEN, LEVEL -1

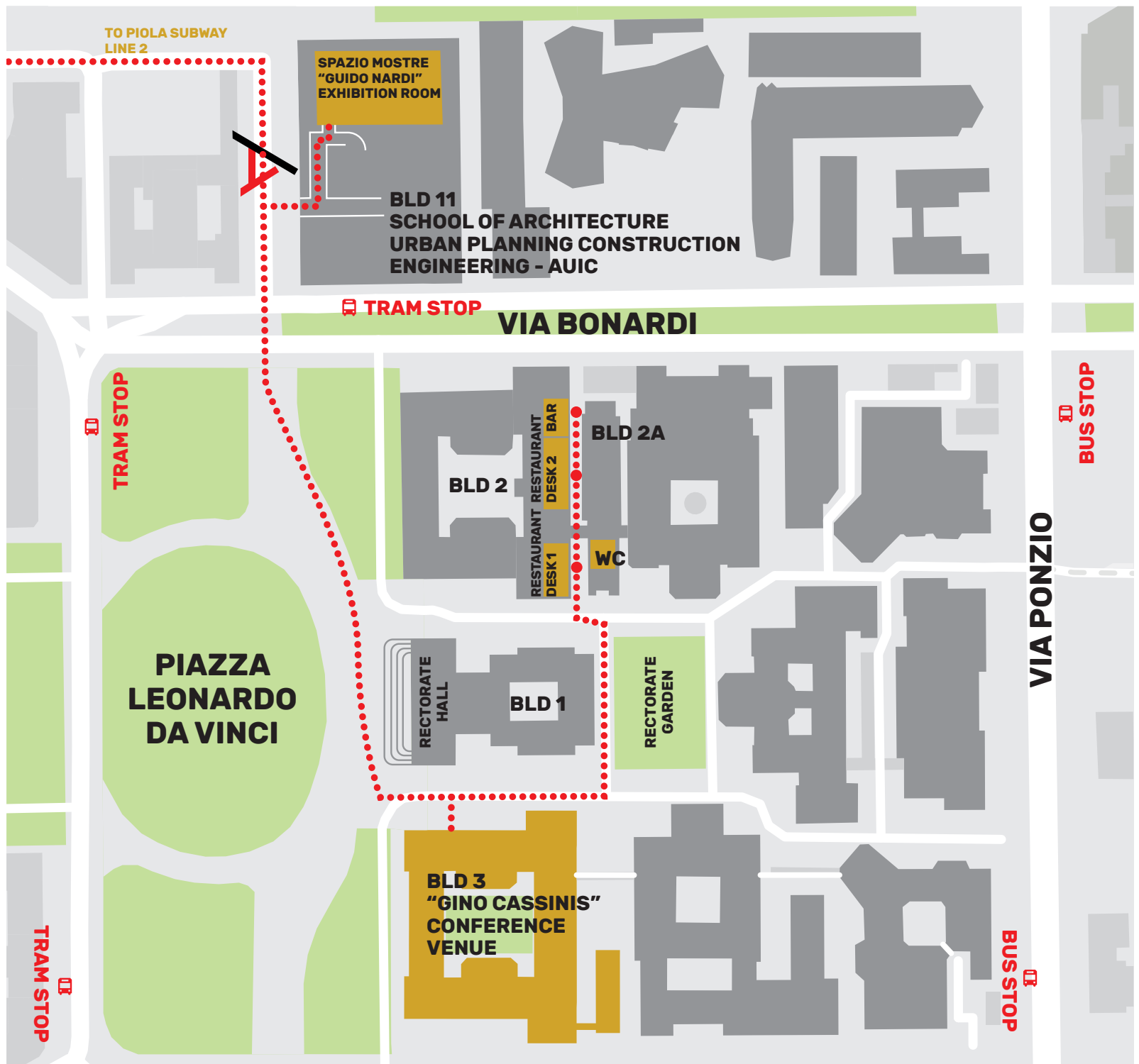
18:00 – 20:30

# CONFERENCE VENUE - AUGUST 4 TO 6 2018

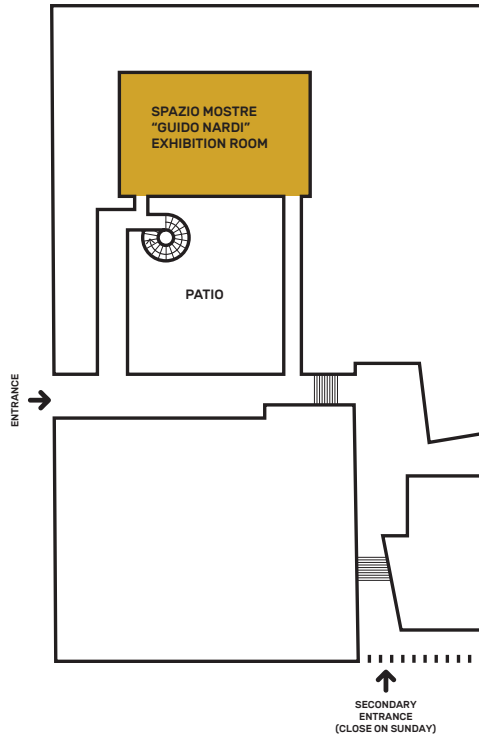
## POLITECNICO DI MILANO



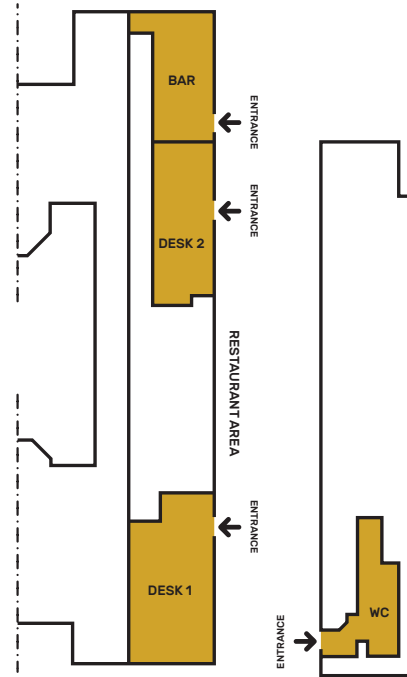
# ACCESSIBILITY



## BUILDING 11

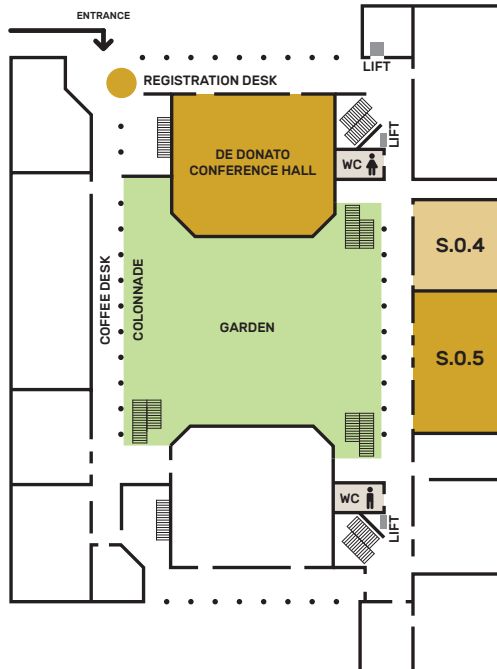


## BUILDING 2 & 2A



## BUILDING 3 - MAIN CONFERENCE VENUE

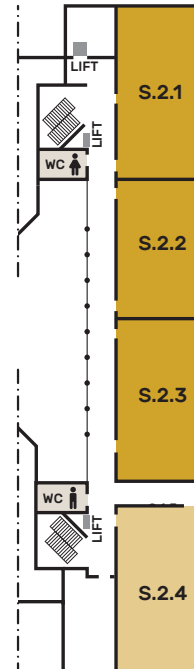
### GROUND FLOOR



### 1st FLOOR



### 2nd FLOOR





POLITECNICO DI MILANO CAMPUS LEONARDO  
BUILDING 3 "GINO CASSINIS"



IC  
GG

40<sup>TH</sup> ANNIVERSARY

REGISTRATION AND COFFEE DESK  
GARDEN LEVEL - COLONNADE

08:40 – 09:00

INVITED LECTURE  
DE DONATO CONFERENCE HALL

09:00 – 09:40

**Session Chair**

Hans-Peter SCHRÖCKER  
[Austria]

#IL003

**Geometric Thinking and the Geometry of  
Conics and Quadrics**

Paul ZSOMBOR-MURRAY  
McGill University, Montréal  
[Canada]

POSTERS SESSION

09:40 – 10:00

**Session Chair**

Biljana S. JOVIĆ  
[Serbia]

#003 (A)

**Spatial Analysis and 3D Modeling: Drawing the Cathedral of  
Brasilia in Different Software**

Lucian NEMER DINIZ, Igor KLEIN DA S. MARINS [Brazil]

#005 (T)

**Geometry of Conjugation of Curvilinear Channels of the Parts**

Aleksandr Yurievich BRAILOV - [Ukraine]

#017 (C)

**Quadratic Characteristics of Workspace Curves of Generalized  
Planar Cable-driven Parallel Mechanisms**

Lewei TANG - [China]

#019 (A)

**The Modeling for Numerical Simulation of a Benchmark Model  
Based on CAD System**

MinLe XU, YuanGuang FU - [China]

#039 (E)

**Visual Art as Science**

Antonio MOLLICONE - [Malta]

#047 (E)

**Learning Creative, Learning MOOC**

Maria Ines PASCARIELLO - [Italy]

#052 (A)

**Comparison with Expression on "Rakuchu Rakugai-zu", Scenes  
in and Around the Capital of Kyoto**

Kazuko MENDE - [Japan]

#057 (A)

**An Algorithm for Computing Geodesic Curve Based on Digital  
Experiment of Point Clouds**

Peng-Fei ZHENG, Qing LIU, Ju-Di ZHAO, Da-Jun LIN, Qi AN - [China]

#063 (A)

**The Golden Ratio and Jewelry Design**

Claudia Regina BATISTA, Adhemar Maria DO VALLE FILHO - [Brazil]

#182 (C)

**Visual Simulation of Erosion Terrain Considering Different  
Materials**

Tomoya ITO, Tsukasa KIKUCHI - [Japan]

COFFEE BREAK - GARDEN LEVEL - COLONNADE

10:00 – 10:20

# SATURDAY MORNING, AUGUST 4, 2018 - H 10:20 TO 13:40



IC  
GG

40<sup>TH</sup> ANNIVERSARY

**(T)** ROOM S.2.1

**Session Chair**  
Daniela VELICHOVÁ  
[Slovakia]

10:20 – 10:40

#006  
**Curved Folding with Pairs of  
Cones**  
Otto RÖSCHEL - [Austria]

10:40 – 11:00

#008  
**The Cube: Its Relatives,  
Geodesics, Billiards, and  
Generalisations**  
Gunter WEISS - [Austria]

11:00 – 11:20

#015  
**Some Theorems of the  
Euclidean Geometry in  
Pentagonal Quasigroups**  
Stipe VIDAK - [Croatia]

11:20 – 11:40

#023  
**Geometric Algorithms for  
Constructing the Algebraic  
Surfaces on the Basis of  
Grassmann's Ideas and their  
Extensive Equations**  
Michael MANEVICH, Elizabeth  
ITSKOVICH - [Israel]

11:40 – 12:00

#031  
**Hyperbolic Space Forms with  
Crystallographic Applications  
and Visualization**  
Emil MOLNÁR, Jenő SZIRMAI -  
[Hungary]

**(T)** ROOM S.2.2

**Session Chair**  
Aleksandr DVORETSKII  
[Russia]

#040  
**Equidistant Sets of Conic and  
Line**  
Mirela KATIC ZLEPALO, Ema JURKIN  
- [Croatia]

#048  
**Surface and Curves: a  
Dialogue Between Nature and  
Structural Analysis**  
Otello BERGAMO - [Italy]

#055  
**Duality in Non-Polyhedral  
Bodies. Part I: Polyliner**  
Eva WOHLLEBEN - [Germany]

#058  
**Quadric Sections of Four-  
Dimensional Cones**  
Michal ZAMBOJ - [Czech Republic]

#065  
**Graphics and Quantum  
Mechanics - the Necker Cube  
as a Quantum-Like Two-Level  
System**  
Giorgio BENEDEK, Giuseppe  
CAGLIOTI - [Italy]

**(C)** ROOM S.2.3

**Session Chair**  
Dario CORONELLI  
[Italy]

#054  
**Solving Applied Geometric  
Design Problems with the Use  
of 3D-CAD**  
Kenjiro SUZUKI - [Japan]

#056  
**Electronic Geometric Modeling  
is the Basis of Modern  
Geometric-Graphic Education  
in the Technical University**  
Vladimir GUZHENKOV, Pavel  
ZHURBENKO - [Russia]

#070  
**Attribute in Formation on  
Three-Dimensional Annotated  
Models - An Example of  
Training Method in Three-  
Dimensional Annotated  
Models for Beginners in  
Mechanical Design**  
Masahiro YASUI, Susumu KISE, Sozo  
SEKIGUCHI, Kazuya OKUSAKA, Shigeo  
HIRANO, Tsutomu ARAKI - [Japan]

#075  
**Transient Finite Elements  
Analysis of Thin-walled  
Structure in Selective Laser  
Melting Process**  
Linshan DING, Li ZHANG, Chunhong  
RUAN, Zaizhuo JIANG - [China]

#130  
**Geometrically Constrained  
Surface (Re)construction**  
Gudrun ALBRECHT - [Colombia],  
Franca CALIÒ, Edie MIGLIO - [Italy]

**(E)** ROOM S.1.2

**Session Chair**  
Zhen LIU  
[China]

#007  
**Practical Skills in AutoCAD  
Through a Mass Open Online  
Course**  
Natalia KAYGORODTSEVA, Valeriia  
LUZGINA - [Russia]

#018  
**Digitizing Spatial Visualization  
Tests**  
Domen KUŠAR, Mateja VOLGEMUT  
- [Slovenia], Lidija PLETENAC -  
[Croatia]

#022  
**The Importance of Circular  
References, Architectural  
Modeling, Digital Project and  
Collaborative Actions in the  
Architecture Learning**  
Ivan XAVIER, Philippe CANTREVA, Igor  
KLEIN - [Brazil]

#034  
**Quality Management of  
Engineering Graphics  
Teaching**  
Dilarom F. KUCHKAROVA, Dilnoza A.  
ACHILOVA - [Uzbekistan]

#037  
**Didactic Experiences  
on Digital Modeling.  
Anamorphosis**  
João Pedro XAVIER, José Pedro  
SOUSA, Alexandra CASTRO -  
[Portugal]

12:00 – 13:40

LUNCH - BUILDING 2 - RESTAURANT DESK 1 & DESK 2

## (H) ROOM S.1.3

Session Chair  
Kazuko MENDE  
[Japan]

#010

**Geometry, Arithmetic, Architecture. Calculation Methods for Vaults' Surfaces in the *Modo di Misurare le Fabriche* by Guarini**  
Roberta SPALLONE - [Italy]

#016

**A Study on Site Planning of Mountain Temples Through Scene Transition Along the Visiting Route by MOTATION: Case Study of Muroji, Hasedera and Kinpusenji Temples in Japan**  
Momoko KATO, Hirokazu ABE, Kensuke YASUFUKU - [Japan]

#088

**A Contribution to the History of Representation. The Unpublished Treatise by Matteo Zaccolini**  
Leonardo BAGLIONI, Marco FASOLO, Matteo Flavio MANCINI - [Italy]

#093

**The Masonry Domes Over the Centuries: the Important Role of Geometry**  
Raffaella PAVANI, Luisa ROSSI-COSTA - [Italy]

#101

**Simulation of the Giant Wild Goose Pagoda in Immersive Virtual Reality Environment**  
Fei YANG, Shilun HAO, Adrian TAN, Jin YANG, Fabian TAN, Michael PARKE - [United States]

## (A) ROOM S.1.4

Session Chair  
Tatsuya MOKIZUKI  
[Japan]

#002

**Alternative Interpretation of the Plücker quadric's Ambient Space and its Application**  
Georg NAWRATIL - [Austria]

#011

**Margin's Landscapes Between Po and Trebbia Rivers in Piacenza Area: Geometrical Descriptions**  
Alessandro BIANCHI - [Italy]

#020

**The Design of Jlamt: an Aided Tool for Large-Scale Complex Physical Modeling**  
Yan MA, Yuanguang FU, Guiming QIN - [China]

#027

**Geometric Basis of the Use of "Green Constructions" for Sun Protection of Glazing**  
Tetyana TKACHENKO, Viktor MILEIKOVSKYI - [Ukraine]

#062

**Examination of the Experience of Biomorphic Form Materialized in Urban Design Model**  
Biljana S. JOVIĆ, Aleksandar A. ČUČAKOVIĆ, Jelena T. TOMIĆEVIĆ-DUBLJEVIĆ, Anđela D. MITIĆ - [Serbia]

## (A) ROOM S.0.5

Session Chair  
Maria Ines PASCARIELLO  
[Italy]

#033

**Toward a New Capital by Le Corbusier - a Synthesis of Images with Different Origins**  
Michio KATO - [Japan]

#043

**The Evolutionary Mechanism of Unit Cell: Parameterizations of Polyhedron Sandwich Structure Based on Rigid Origami**  
Hao QIU, Yicong GAO, Yixiong FENG, Hao ZHENG, Jianrong TAN - [China]

#051

**Converting 3D-CAD Data into FRP Parts**  
Sande GAO - [Japan], Loulin HUANG - [New Zealand]

#059

**Generic Fitting in Point Clouds**  
Daniel KLAWITTER, Oliver BRINGMANN, Christian TONN - [Germany]

#096

**Geometry of Stairs**  
Cornelie LEOPOLD - [Germany]

## FREE STUDY ROOMS S.2.4, S.1.5, S.0.4



40<sup>TH</sup> ANNIVERSARY

10:20 - 12:00  
FREE TIME  
FOR VISITING  
MILAN

INFO  
CONFERENCE DESK AND  
CONFERENCE WEBPAGE  
"VENUE"



LAST SUPPER EXTRA PROGRAM

12:15

(13:40-16:20 ACCOMPANYNG PERSON TOUR)

# SATURDAY AFTERNOON, AUGUST 4, 2018 - H 13:40 TO 15:20



IC  
GG

40<sup>TH</sup> ANNIVERSARY

**(T)** ROOM S.2.1

**Session Chair**  
Michal ZAMBOJ  
[Czech Republic]

**(E)** ROOM S.2.2

**Session Chair**  
Mateja VOLGEMUT  
[Slovenia]

**(C)** ROOM S.2.3

**Session Chair**  
Lijie GUAN  
[China]

**(E)** ROOM S.1.2

**Session Chair**  
Marco HEMMERLING  
[Germany]

13:40 – 14:00

#067

**Two Remarkable Spherical Arrangements of Circles**  
Hellmuth STACHEL - [Austria]

#084

**Research on the Effect of Providing User Interaction for Graphic Education**

Biljana S. JOVIĆ - [Serbia], Takashi OHTA, Noriko SATO - [Japan]

#078

**Facial Expression Recognition Based on Weighted KNN and RF**

Feng KAIPING, Lai SIYUAN, Li QUANJIE, Wen JUNWEN - [China]

#041

**Formation of Competence in Students of Technical University for 3D-Modeling and Prototyping of the Objects**

Tatiana BOSHCHENKO, Natalia KAYGORODTSEVA - [Russia]

14:00 – 14:20

#072

**Minkowski Triples of Curve Segments**

Daniela VELICHOVÁ - [Slovakia]

#086

**Research and Practice of the Mixed Teaching Mode for Engineering Graphics Based on MOOC**

Jingying ZHANG, Wei YANG, Xianying TONG, Hui ZHANG - [China]

#110

**The Optimization Algorithm for Gait Planning and Foot Trajectory on the Quadruped Robot**

Baoling HAN, Xiao LUO, Rui ZHAO, Qingsheng LUO, Guan hao LIANG - [China]

#044

**Creative Graphics Education Potential for Creativity of Hospitality Students via Virtual Environment**

Zhen LIU - [China]

14:20 – 14:40

#077

**Quasifocal Line and "Burning Curve"**

Aleksandr DVORETSKII, Tetiana DENYSOVA - [Russia]

#091

**Biomimetical Approach in Training Students of Technical Institutes in Graphic Disciplines with Aim of Developing Creativity and Formation of Professional Culture of the Engineer**

Galina GAVRILENKO, Uliana DANILOVA, - [Russia]

#252

**Mixing of Fluids with Space-Filling Curves**

Martin Friedrich EICHENAUER, Kevin NOACK, Daniel LORDICK - [Germany]

#045

**Basic Modelling Education to Obtain 3D Spatial Perception for Design Beginners**

Maiko Kishimoto TSUJII, Ayako KITA - [Japan]

14:40 – 15:00

#121

**Curves and Surfaces in the Churches with Ovate Plant in Naples. Geometric Analogies and Differences**

Ornella ZERLENGA, Vincenzo CIRILLO - [Italy]

#092

**Non-Conventional Representation for Urban Design: Depicting the Intangible**

Barbara E. A. PIGA, Rossella SALERNO - [Italy]

#266

**Challenges in Modelling Complex Geometry in Historical Buildings for Numerical Simulations**

Grigor ANGJELIU, Dario CORONELLI, Giuliana CARDANI - [Italy]

#168

**The Effect of a Two-Dimensional Optical Illusion Pattern on the Three-Dimensional Interpretation of Objects Using Café Wall "Illusion Blocks"**

Tomoko OHTANI, Daiki AMANAI, Kazushi MARUYA - [Japan]

15:00 – 15:20

COFFEE BREAK

## (H) ROOM S.1.3

**Session Chair**  
Elena I. SHANGINA  
[Russia]

#030

**Drawings and Models in English Perspective Treatises of the XVII and XVIII Centuries**  
Cristina CÂNDITO - [Italy]

#038

**Theater and the Towns**  
Enrica PIERAGOSTINI, Salvatore SANTUCCIO - [Italy]

#053

**The Study of "Deconstructivism" in the Field of Architecture. Referring to Exhibition at MoMA and Bernard Tschumi**  
Masanao KITAMURA, Kensuke YASUFUKU, Hirokazu ABE - [Japan]

#061

**Graph Theory and Music: a Mathematical Tool for Musicians**  
Giovanni ALBINI - [Italy-Estonia], Marco Paolo BERNARDI - [Italy]

## (A) ROOM S.1.4

**Session Chair**  
Georg NAWRATIL  
[Austria]

#026

**Printer of Five-axis Laminating with FDM Method and its Application** Tatsuya MOCHIZUKI, Takehiro KAWAMURA - [Japan]

#069

**Exempla Imperfecta: the "Curious" Image of the Platonic Solid** Gabriella LIVA - [Italy]

#081

**Interactive Visualization for Analysis of Air Traffic Model**  
Kensuke YASUFUKU, Shinsuke NAGAOKA - [Japan]

#085

**Best-Fit Analysis for the Geometry Characterization of Domes** Laura FLORIANO, Mariangela LIUZZO, Giuseppe MARGANI - [Italy]

## (A) ROOM S.0.5

**Session Chair**  
Michio KATO  
[Japan]

#035

**Identification Method of Topographic Surfaces Models**  
Dilarom F. KUCHKAROVA, Dilnoza A. ACHILOVA - [Uzbekistan]

#090

**Visualized Analysis of Spatial Distribution of Dissolved Oxygen and Nitrogen Removal Efficiency in Constructed Wetland**  
Aichen JIA, Huixue YAN - [China]

#094

**Application of Middle-Out Design Based on Multi-Body Method** Hongxia SONG - [China]

#097

**A Geometric Look at 3D Illusionist Techniques**  
Maria Helena WYLLIE LACERDA RODRIGUES, Madalena RIBEIRO GRIMALDI, Daniel WYLLIE LACERDA RODRIGUES - [Brazil]

**FREE STUDY ROOMS**  
S.2.4, S.1.5, S.0.4



40<sup>TH</sup> ANNIVERSARY

**13:40 - START OF ACCOMPANYNG PERSON TOUR**

**"NAVIGLI OF MILAN"**  
GUIDED TOUR  
ON BOAT  
OF THE MILANESE  
CANALS



GARDEN LEVEL - COLONNADE

# SATURDAY AFTERNOON, AUGUST 4, 2018 - H 15:20 TO 16:40



IC  
GG

40<sup>TH</sup> ANNIVERSARY

## (A) ROOM S.2.1

**Session Chair**  
Luciana NEMER DINIZ  
[Brazil]

## (A) ROOM S.2.2

**Session Chair**  
Peng-Fei ZHENG  
[China]

## (C) ROOM S.2.3

**Session Chair**  
Otello BERGAMO  
[Italy]

## (E) ROOM S.1.2

**Session Chair**  
Biljana S. JOVIĆ  
[Serbia]

15:20 – 15:40

#136

### **From Voxels to Parts: Hierarchical Discrete Modeling for Design and Assembly**

Andrea ROSSI, Oliver TESSMANN -  
[Germany]

#144

### **Geometric Representation of Turbulent Macrostructure in 3D Jets**

Olena GUMEN, Volodymyr  
DOVHALIUK, Viktor MILEIKOVSKYI -  
[Ukraine]

#106

### **Curves with Special Aesthetics Generated by an Original Mechanism**

Iulian POPESCU, Ludmila SASS, Alina  
DUȚĂ, Marcela POPESCU, Gabriel  
MARINESCU - [Romania]

#111

### **Shell Tessellation – Research- Based Design Strategies Between Architecture and Mathematics**

Marco HEMMERLING - [Germany],  
Carlo DE FALCO, Elena ANGELI -  
[Italy]

15:40 – 16:00

#137

### **A Program to Seek Drawing Methods for Descriptive Geometry in Prolog**

Shinobu NAGASHIMA - [Japan]

#147

### **The Geometry of the Ramps in Frank Lloyd Wright's Organic Architecture**

Ana TAGLIARI, Wilson FLORIO -  
[Brazil]

#109

### **The Configuration Design and Analysis of a Small Air-Land Amphibious Detecting Robot**

Xiao LUO, Qingsheng LUO, Chen ZHU,  
Baoling HAN - [China]

#117

### **Teaching Geometry and Surfaces Evaluation Through Graphic Representation and Dynamic Paper Models**

Caterina CUMINO, Martino  
PAVIGNANO, Maria Luisa SPREAFICO,  
Ursula ZICH - [Italy]

16:00 – 16:20

#138

### **Study on the Modeling Converting Methods of Complex Mechanical Product Exterior Design**

Gan JING, Ma LEI - [China]

#149

### **Interaction Between 3D Printing and Geometry Studies**

Marianna ZICHAR, Ildikó PAPP -  
[Hungary]

#113

### **Research on Parametric Modeling of Cable-Stayed Bridge Based on BIM**

Ziru WANG, Yuanjun HE, Baiyu MA  
- [China]

#131

### **Systematic Review of a Flipped Learning Model for the Courses of Descriptive Geometry, Engineering and Computer Graphics**

Marianna Vladimirovna VORONINA,  
Sergei Anatolyevich IGNATIEV,  
Viktoriya Anatolyevna MERKULOVA  
- [Russia]

16:20 – 16:40

COFFEE BREAK

## (H) ROOM S.1.3

**Session Chair**  
Roberta SPALLONE  
[Italy]

#064

**Phonurgia Nova. Geometrical Acoustics in the 17th Century**  
Alessio BORTOT - [Italy]

#066

**Geometry as a Tool to Manage the Territory. Nicolaas Cruquius and the Map of the Merwede**  
Laura CARLEVARIS - [Italy]

#073

**The Quincunx as Architectural Structure. Geometry and Digital Reconstructions after Leonardo da Vinci's Centralized Plan Temples**  
Marco CARPICECI, Fabio COLONNESE - [Italy]

## (A) ROOM S.1.4

**Session Chair**  
Tetyana TKACHENKO  
[Ukraine]

#107

**Graphical Analysis of the Structural Behavior, According Hypothesis of Rankine-Schwedler, of a Large Stone Dome in Granada (Spain)**  
Javier SUÁREZ, Rafael BRAVO, José A. GONZÁLEZ - [Spain]

#108

**Modularity of Concave Polyhedra of the Second Sort with Octagonal Bases**  
Marija OBRADOVIĆ - [Serbia]

#126

**Repetition of Triangle Fountain of Aldo Rossi: Geometrical Analogy of Architecture**  
Yuji KATAGIRI - [Japan]

## (A) ROOM S.0.5

**Session Chair**  
Daniel KLAWITTER  
[Germany]

#127

**3D Modeling of the Biological Form of the Green Chinche**  
Dina ROCHMAN, America SÁNCHEZ - [Mexico]

#128

**Research on Video Representation by Unexperienced Viewpoint Using 360-Degree Movie**  
Yuya SATO, Tsukasa KIKUCHI - [Japan]

#134

**An Algebraic Version of the Input-Output Equation of Planar Four-Bar Mechanisms**  
Manfred HUSTY, Martin PFURNER - [Austria]

**FREE STUDY ROOMS**  
S.2.4, S.1.5, S.0.4



IC  
GG

40<sup>TH</sup> ANNIVERSARY

**16:20 - END OF  
ACCOMPANYING  
PERSON  
TOUR**

**“NAVIGLI OF MILAN”  
GUIDED TOUR  
ON BOAT  
OF THE MILANESE  
CANALS**



GARDEN LEVEL - COLONNADE

# SATURDAY AFTERNOON, AUGUST 4, 2018 - H 16:40 TO 22:30



IC  
GG

40<sup>TH</sup> ANNIVERSARY

16:40 – 17:20

## PLENARY

DE DONATO CONFERENCE HALL

TS REPORT

**Round Table with Session Chairs  
and Open Discussion**

**Session Co-Chairs**

Željka MILIN ŠIPUŠ  
[Croatia]

Paweł RUBINOWICZ  
[Poland]

17:20 – 18:00

INVITED LECTURE

**Session Chair**

Cornelie LEOPOLD  
[Germany]

#IL004

**Designing with Shadow /  
in Architectural Lighting Design**

Kaoru MENDE  
Lighting Planners Associates, Tokyo  
[Japan]

18:00 – 22:30

ISGG BOARD MEETING  
(ISGG BOARD MEMBERS ONLY)

BLD 1  
RECTORATE MEETING ROOM

▶ **LAST SUPPER EXTRA PROGRAM** ◀

18:45

**FREE TIME FOR PARTICIPANTS**



POLITECNICO DI MILANO CAMPUS LEONARDO  
BUILDING 3 "GINO CASSINIS"



IC  
GG

40<sup>TH</sup> ANNIVERSARY

LAST SUPPER EXTRA PROGRAM  
08:15

REGISTRATION AND COFFEE DESK  
GARDEN LEVEL - COLONNADE

08:40 – 09:00

INVITED LECTURE  
DE DONATO CONFERENCE HALL

09:00 – 09:40

Session Chair

Baoling HAN  
[China]

#IL005

Higher Dimensional Geometries  
What Are They Good For?

Boris ODEHNAL  
University of Applied Arts, Vienna  
[Austria]

POSTERS SESSION

09:40 – 10:00

Session Chair

Fei YANG  
[United States]

#071 (C)

Kinematical Ruled Surfaces Based on Interrelated Movements  
in Axoids' Triad "Torse-Cone-Cone"

Galina S. RACHKOVSKAYA, Yuriy N. KHARABAYEV - [Russia], Natalya S.  
RACHKOVSKAYA - [United States]

#087 (A)

Determining Features of Volumes of Interest of Medical  
Ultrasound Images

Robert TORNAI, Péter TÖRÖK, János Péter PÁLMAI, Botond BALOGH -  
[Hungary]

#099 (C)

Getting the Smallest Sphere which is Tangent to Four Non-  
Parallel Unlimited Skew Lines in General Positions Based on  
MATLAB

Ye TAO, Sheng WEN, Kai ZHANG - [China]

#100 (H)

The Alexander Mosaic and the House of the Faun. The Iconic  
Light of Geometric Relationships

Luisa FERRO - [Italy]

#129 (E)

Representation of an Object as a Semiotics Sign in Engineering

Harri LILLE, Aime RUUS - [Estonia]

#151 (A)

Designing by Rules: Parametric Workflow Behind ICGG2018  
Conference Logo

Matteo CAVAGLIÀ - [Italy]

#167 (T)

Wallace-Simson Line In Four Cayley-Klein Planes

Ivana BOŽIĆ DRAGUN - [Croatia]

#174 (T)

Building Types and Narrative Development in Emaki –  
Comparing the Compositions of *Kasuga Gongen Genki* and  
*Ishiyama-dera Engi Emaki*

Noriko SATO - [Japan]

#233 (E)

MRT as a Testing Instrument in Research on a Singular Aptitude  
among Architecture Students

Renata GÓRSKA, Agnieszka WOJTOWICZ, Barbara WOJTOWICZ - [Poland]

COFFEE BREAK - GARDEN LEVEL - COLONNADE

10:00 – 10:20

# SUNDAY MORNING, AUGUST 5, 2018 - H 10:20 TO 20:30



IC  
GG

40<sup>TH</sup> ANNIVERSARY

**(T)** ROOM S.2.1

**Session Chair**

Noriko SATO  
[Japan]

**(T)** ROOM S.2.2

**Session Chair**

Ivana BOŽIĆ DRAGUN  
[Croatia]

**(E)** ROOM S.2.3

**Session Chair**

Giorgio BOLONDI  
[Italy]

**(H)** ROOM S.1.2

**Session Chair**

Luisa FERRO  
[Italy]

10:20 – 10:40

#112

**Composition and  
Deconstruction of Spaces  
Depicted in Shinji Somai's  
Films**

Naomi ANDO, Motoharu TANEDA,  
Shota ISHII, Nobuhiro YAMAHATA -  
[Japan]

#080

**A Property of Area and  
Perimeter**

Douglas DUNHAM, John  
SHIER - [United States]

#16

**A Revised Project-Based  
Learning Program on  
Geometry - Maximizing the  
Volume of Solid**

Ichiro TANAKA - [Japan]

#009

**Leonardo da Vinci as a  
Scientist in Assessing the  
Encyclopedic Literature of  
Imperial Russia, the Soviet  
Union and the Russian  
Federation**

Mikhail MASHKARIN, Natalia  
KAYGORODTSEVA - [Russia]

10:40 – 11:00

#215

**Optimized Ruled Surfaces  
with an Application to thin-  
walled Concrete Shells**

Kevin NOACK, Daniel LORDICK -  
[Germany]

#123

**Isotomic Transformation  
with Respect to a Family of  
Triangles**

Helena KONCUL - [Croatia]

#158

**From the Plan to the 3D Model  
Through Folding. Case Studies  
in Fashion Design**

Alessandra AVELLA - [Italy]

#074

**The Triad of Vitruvius in the  
Modern World**

Elena I. SHANGINA - [Russia]

11:00 – 11:20

#273

**Detection of Critical Direction  
for Feature Line Extraction  
on Meshes Based on Local  
Integral Invariants**

Qiqi GAO, Yasushi YAMAGUCHI -  
[Japan]

#155

**Geometric Constructive  
Traces in Drawings by  
Francesco Borromini**

Marco CANCELANI, Giovanna  
SPADAFORA, Maria del Pilar PASTOR  
ALTABA, Giovanni FORMICA, Marco  
D'ANGELICO, Camilla LEBBORONI  
- [Italy]

#050

**Teaching 3D Character  
Animation Through Four  
Related Tasks**

Ratko OBRADOVIĆ, Miloš  
VUJANOVIĆ, Igor KEKELJEVIĆ -  
[Serbia]

#029

**Geometry/Time  
Measurement/Sundials.  
Graphical Resolution via  
Algorithmic and Parametric  
Processes**

Francesco DI PAOLA - [Italy]

11:20 – 12:00

**TS REPORT**

DE DONATO CONFERENCE HALL

**Round Table with Session Chairs  
and Open Discussion**

**Session Co-Chairs**

Jessica ROMOR  
[Italy]

Hiroataka SUZUKI  
[Japan]

12:00 – 13:40

LUNCH - BUILDING 2 - RESTAURANT DESK 1 & DESK 2

13:40 – 14:20

EXHIBITION OPENING - BUILDING 11 - SPAZIO MOSTRE "GUIDO NARDI"  
"40 YEARS OF GEOMETRY AND GRAPHICS" & "ICGG 2018 POSTERS ON SHOW"

14:20 – 20:30

CONFERENCE TOUR - MEETING POINT AT POLITECNICO DI MILANO - BUILDING 11

## (H) ROOM S.1.3

**Session Chair**  
Renata GÓRSKA  
[Poland]

#122

**Ludovico Cardi Said "Il Cigoli". Practical Treaty of Perspective: Innovative Aspects and Intuitions**  
Daniele CALISI - [Italy]

#132

**De L'Orme's Graphics Language: Between Stereotomy and Orthogonal Proto-Projection**  
Antonio CALANDRIELLO - [Italy]

#140

**Sharawadgi and Penetrating Space in Chinese Classic Gardens. An Analysis of Perceptual Space in Wangshi Garden**  
Luyi LIU - [Italy]

## (A) ROOM S.1.4

**Session Chair**  
Robert TORNAL  
[Hungary]

#156

**Directorial Surfaces and Potential Applications in Cupola Design**  
Maja M. PETROVIĆ, Radovan B. STULIC, Marko P. VUČIĆ, Radomir M. MIJAILOVIĆ - [Serbia]

#157

**Interactive Expansion of Achiral Polyhedra**  
Vera VIANA, João Pedro XAVIER, Ana Paula AIRES, Helena CAMPOS - [Portugal]

#160

**A Storage Model for Large Scale Web-based Learning Systems Based on Concept Tree**  
Hongming CAI, Zheng WANG, Jingjing LI, Haiyan YU, Yuanjun HE, Yonggen GU - [China]

## FREE STUDY ROOMS S.2.4, S.1.5, S.0.4, S.0.5



IC  
GG

40<sup>TH</sup> ANNIVERSARY

10:20 - 12:00  
**FREE TIME  
FOR VISITING  
MILAN**

**INFO**  
CONFERENCE DESK AND  
CONFERENCE WEBPAGE  
"VENUE"



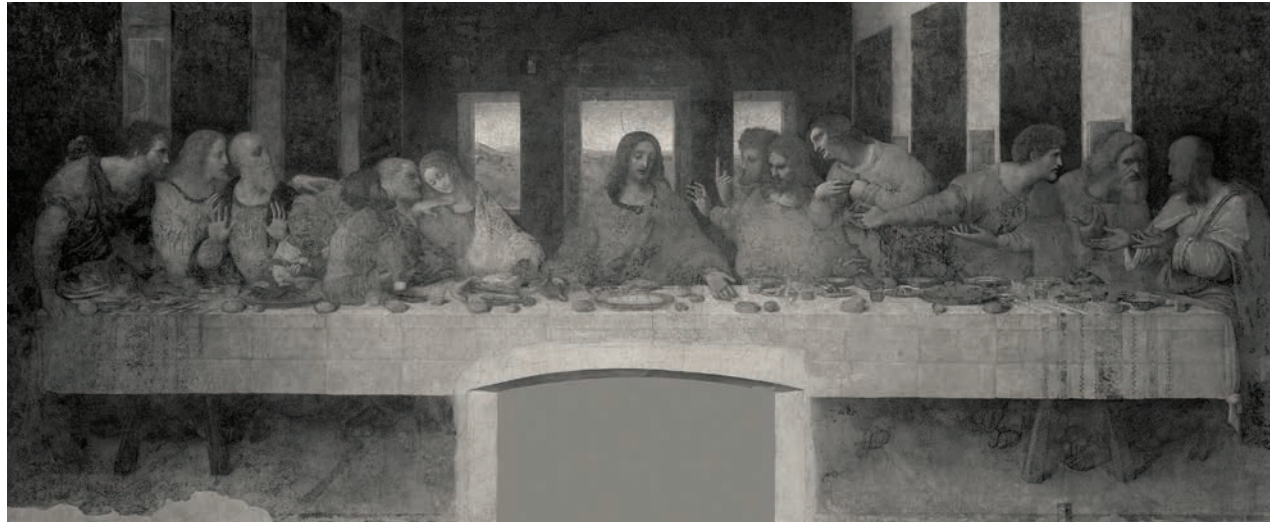
# EXCURSIONS

## LAST SUPPER AND CITY CENTER

### LIMITED PLACES AVAILABLE(\*)

Visit to the  
"Last Supper"  
and the city center  
of Milan

(\*) see also "Last supper"  
extra program at page 3



## UPPER BERGAMO

### MAIN CONFERENCE TOUR

Visit to Upper Bergamo,  
the walls (UNESCO  
heritage), the historical  
city center with the  
spectacular view  
on the Po Valley



POLITECNICO DI MILANO CAMPUS LEONARDO  
BUILDING 3 "GINO CASSINIS"



IC  
GG

40<sup>TH</sup> ANNIVERSARY

REGISTRATION AND COFFEE DESK  
GARDEN LEVEL - COLONNADE

08:40 – 09:00

INVITED LECTURE  
DE DONATO CONFERENCE HALL

09:00 – 09:40

**Session Chair**

Daniel LORDICK  
[Germany]

#1L006

**Computational Visual Illusion  
and Its Application**

Peeraya SRIPIAN  
Shibaura Institute of Technology, Tokyo  
[Japan]

**POSTERS SESSION**

09:40 – 10:00

**Session Chair**

Daniela VELICHOVÁ  
[Slovakia]

#036 (H)

**Luca Pacioli: a friend of Leonardo da Vinci. De Divina  
Proportione in Capital Letters**

Paola MAGNAGHI-DELFINO, Tullia NORANDO - [Italy]

#246 (H)

**Vilnius Cathedral Ceiling Interactive 3D Models – Exploration and  
Digitalization**

Daiva MAKUTĖNIENĖ - [Lithuania]

#115 (A)

**A Study on Automatic Generation of Heating Patterns of Contour  
Maps for 2.5D Printing**

Hiromasa SUZUKI, Yutaka OHTAKE, Yuta MIWA - [Japan]

#248 (E)

**A Study on Monozukuri Education in Karakuri Doll Production**

Hiroki TOMINAGA, Masayuki MORI, Naoki IIDA, Kenichi HIROSE - [Japan]

#180 (A)

**Geometric Analysis and Engineering Application of Conic Section**

Yaqi XU, Chengfang ZHANG, Xinwu MI - [China]

#261 (E)

**Features of Teaching the Graphic Discipline Courses for Different  
Specialty Students**

Iryna TARAS - [Ukraine]

#186 (T)

**Parametrizing 3-Webs of Circles on Darboux Cyclides**

Rimvydas KRASAUSKAS - [Lithuania]

#272 (A)

**Study on Analysis Support of Lubrication Phenomenon by Three-  
Dimensional CAD. Development of Auxiliary Analysis Tool for CAD**

Toshiaki KANDA, Masatoshi NIIZEKI, Toshihiro OZASA - [Japan]

#235 (C)

**Federated Parametric Models for Seismic Risk Analysis in  
Existing Buildings**

Carlo BIAGINI, Paolo OTTOBRI - [Italy]

#279 (E)

**Projections: Applications from Geometric and Project Design  
Education**

Caio Cesar PEREIRA, Guacira MACEDO DOS SANTOS, Sandra DE ARAUJO  
BARATA GOMES - [Brazil]

COFFEE BREAK - GARDEN LEVEL - COLONNADE

10:00 – 10:20

# MONDAY MORNING, AUGUST 6, 2018 - H 10:20 TO 13:40



IC  
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40<sup>TH</sup> ANNIVERSARY

**(T)** ROOM S.2.1

**Session Chair**  
Andrea GIORDANO  
[Italy]

**(T)** ROOM S.2.2

**Session Chair**  
Rimvydas KRASAUSKAS  
[Lithuania]

**(C)** ROOM S.2.3

**Session Chair**  
Carlo BIAGINI  
[Italy]

**(E)** ROOM S.1.2

**Session Chair**  
Niels-Christian FRITSCHÉ  
[Germany]

10:20 – 10:40

#177  
**Relationship Between Time and Typical Buildings Depicted in Kasuga Gongen Genki**  
Noriko SATO - [Japan]

#024  
**The Properties of Special Points on the Brocard Circle in a Triangle**  
Victor OXMAN, Avi SIGLER, Moshe STUPEL - [Israel]

#118  
**Aircraft Target Recognition in Remote Sensing Images Based on Saliency Maps and Invariant Moments**  
Jie LUO, Jiexian ZENG, Jun FU, Xiang FU, Lu LENG - [China]

#181  
**Comparative Analysis of Teaching in Geometric Surfaces at Architectural Faculties in Niš and Tokyo**  
Sonja KRASIĆ - [Serbia], Naomi ANDO - [Japan], Petar PEJIĆ, Zlata TOŠIĆ - [Serbia]

10:40 – 11:00

#179  
**Study and Practice on Double Deck Folding Structure Mobile Home Design Development**  
Shin TSUCHIYA, Toshikazu ISHIDA - [Japan]

#082  
**Examples of Autoisoptic Curves**  
Boris ODEHNAL - [Austria]

#133  
**Generating Videos Based on Convolutional Recurrent Generative Adversarial Networks**  
Yachao LI, Toshihiro KOMMA - [Japan]

#188  
**Mathegraphics. Integrating Graphic, Geometrical and Algebraic Representation in Teaching and Research Through a Dialogical Approach**  
Enrico CICALÒ, Andrea CAUSIN, Margherita SOLCI - [Italy]

11:00 – 11:20

#187  
**On One Locus in the Plane**  
Jiri BLAZEK, Pavel PECH - [Czech Republic]

#192  
**Structure Functions of Ruled Surfaces with Null Rulings**  
Ljiljana PRIMORAC GAJČIĆ, Ivana PROTRKA, Željka MILIN ŠIPUŠ - [Croatia]

#153  
**Orthographic Drawings Minting: Testing for Indeterminate Solid Models Caused by Underrepresentation**  
Peter ROSSO, Ben HICKS, Michael PATTERSON - [United Kingdom]

#196  
**Character Making Education by DREAM Process**  
Ryuta MOTEGI, Yoshihisa KANEMATSU, Naoya TSURUTA, Koji MIKAMI, Kunio KONDO - [Japan]

11:20 – 11:40

#189  
**Geometrical Structures of Planar and Spatial Tessellations Based on 3D Models of Higher Dimensional Cubes**  
László VÖRÖS - [Hungary]

#197  
**The Geometry of Quadratic Quaternion Polynomials in Euclidean and Non-Euclidean Planes**  
Zijia LI, Josef SCHICHO, Hans-Peter SCHRÖCKER - [Austria]

#161  
**A Creo-Based Modeling and Toolpath Generating System for the NC Whirling Process of Propeller Blades**  
Xinfeng LIU, Riliang LIU - [China]

#205  
**A Course on Geometric Dimensioning and Tolerancing: Overview and Initial Assessment**  
Theodore J. BRANOFF - [United States]

11:40 – 12:00

#190  
**Logicometry: Graphical Representations of Logical Space Interrelations**  
Panayiotis VAROUTSOS - [Greece]

#200  
**Graphical Model of the Biquadratic Transformation**  
Auyez BAIDABEKOV, Seriktay BAYMUKHANOV, Elmira KEMELBEKOVA - [Kazakhstan]

#195  
**Directing Scheme Support Method Based on Analysis of Angry Characters**  
Yoshihisa KANEMATSU, Ryuta MOTEGI, Naoya TSURUTA, Koji MIKAMI, Kunio KONDO - [Japan]

#209  
**Byrne's Euclidean Geometry Revisited with Geogebra**  
Giorgio BOLONDI, Alessandro LUIGINI - [Italy]

12:00 – 13:40

LUNCH - BUILDING 2 - RESTAURANT DESK 1 & DESK 2

## (H) ROOM S.1.3

### Session Chair

Matteo Giuseppe ROMANATO  
[Italy]

#141

### Between Survey and Interpretation: the Ideal Shape of *Flavian Amphitheater* According to Carlo Lucangeli

Jessica ROMOR, Graziano Mario VALENTI - [Italy]

#143

### *La Géométrie Pratique*. Survey Manuals in France Between the 18th and 19th Centuries

Camilla CASONATO - [Italy]

#146

### Perspective Analysis of the Inlaid Wood Panel from Duomo of Bergamo

Giorgio BURATTI, Giampiero MELE - [Italy]

#166

### Digital Renovation and Archives of Japanese Ancient Ritual Performance at the World Cultural Heritage: *Niutsumi Shrine*

Kohei FURUKAWA, Kazuya KOJIMA, Kozaburo HACHIMURA - [Japan]

#176

### Astronomy of Shadows and Light: Athanasius Kircher's Sundials Between Geometry, Perspective and Science

Cosimo MONTELEONE, Isabella FRISO - [Italy]

## (A) ROOM S.1.4

### Session Chair

Masatoshi NIIZEKI  
[Japan]

#162

### Introduction to "Architectural Geometry": Through Analysis of Architecture Made of Square Plan

Takahiro OHMURA - [Japan]

#169

### A Suggestion of the Optical Illusion Blocks for an Architectural Theory: Toward an Architecture in the Near Future

Daiki AMANAI, Tomoko OHTANI, Kazushi MARUYA - [Japan]

#172

### Suggestions for new Content in the Planetarium

Kosei YAMAMURA, Satoshi CHO, Hisashi SATO - [Japan]

#175

### Triangular Proportional Scheme and Concept of Two Serbian Medieval Churches

Magdalena DRAGOVIĆ, Aleksandar ČUČAKOVIĆ - [Serbia], Jelena BOGDANOVIĆ - [United States], Svetlana ČIČEVIĆ, Aleksandar TRIFUNOVIĆ - [Serbia]

#178

### Perspective and the Blind. Towards a Communication of Painted Spaces to the Visually Impaired

Barbara ANSALDI - [Italy]

## (A) ROOM S.0.5

### Session Chair

Luis ROMÃO  
[Portugal]

#183

### Extended Morphological Closing Using Geodesic Filtering

Takashi MICHIKAWA, Satoshi WADA - [Japan]

#185

### Making Full-dome Images Using Camera with Fisheye Lens and Full-dome Picture on Bowl. Workshop for Children at Planetarium

Hidekazu TSUJIAI, Megumi TAKENAKA, Tadashi HAYASHI - [Japan]

#193

### Visualizing of Infants' Behavior at Home Using Augmented Reality for Promotion of Development and Prevention of Accidents

Miho NISHIZAKI - [Japan]

#194

### Visual Paradoxes in Video Games: Spatial Reconstructions and Geometric Analysis

Alessandro OLIVIERI, Ramona FERIOZZI - [Italy]

#202

### Smart Artefacts and Spaces to Interact, Promote and Transfer Cultural Knowledge

Mauro CECONELLO - [Italy]

## FREE STUDY ROOMS

S.2.4, S.1.5, S.0.4



ICGG

40<sup>TH</sup> ANNIVERSARY

10:20 - 12:00  
FREE TIME  
FOR VISITING  
MILAN

INFO  
CONFERENCE DESK AND  
CONFERENCE WEBPAGE  
"VENUE"



(13:40-16:40 ACCOMPANYING PERSON TOUR)

# MONDAY AFTERNOON, AUGUST 6, 2018 - H 13:40 TO 15:20



IC  
GG

40<sup>TH</sup> ANNIVERSARY

**(T)** ROOM S.2.2

**Session Chair**  
Noriko SATO  
[Japan]

**(E)** ROOM S.2.2

**Session Chair**  
Sonja KRASIĆ  
[Serbia]

**(C)** ROOM S.2.3

**Session Chair**  
Jie LUO  
[China]

**(E)** ROOM S.1.2

**Session Chair**  
Kunio KONDO  
[Japan]

13:40 – 14:00

#083

**A Spatial Version of the Theorem of the Angle of Circumference**

Georg GLAESER, Boris ODEHNAL,  
Hellmuth STACHEL - [Austria]

#236

**Is the Constructional Drawing an International Language for Engineers?**

Modris DOBELIS - [Latvia],  
Piotr POLINCEUSZ, Monika SROKA-  
BIZON, Krzysztof TYTKOWSKI  
- [Poland], Daniela VELICHOVA -  
[Slovakia], Antanas VANSEVICIUS  
- [Lithuania]

#159

**From Orthographic Drawings to Editable Models of Simple Solid Using “Reconstruction-Composition” Coupled with Feature Recognition**

Peter ROSSO, Ben HICKS, Michael  
PATTERSON - [United Kingdom]

#212

**New Analog for the Digital Age: Adjusting Simultaneousness for Self-Explanatory Delineation of Architectural and Urban Projects in Public Presentations or: A “Nolli Isometric”**

Niels-Christian FRITSCHKE -  
[Germany]

14:00 – 14:20

#234

**Integration Between Perspective Images and BIM Models: Projective Geometry is still Alive**

Paolo BORIN, Andrea GIORDANO,  
Federico PANAROTTO - [Italy]

#256

**Geometrography Revised and Enlarged: a Brazilian Geometer’s Approach to Émile Lemoine’s Work**

Marcelo DA SILVA BUENO - [Brazil]

#171

**3-D Reconstruction of Bubbles Inside Valve Based on Multi-mirrors Imaging**

Liye JIAO, He XU, Haihang  
WANG, Zitong ZHAO, Pooneeth  
VISHWANATH - [China]

#225

**A Multiview Interactive Interface for the Solution of Descriptive Geometry Problems**

Fabio G. TEIXEIRA, Sérgio L. DOS  
SANTOS, Fernando B. BRUNO -  
[Brazil]

14:20 – 14:40

#280

**Using Topological Transformations to Construct the Intercepting Lines**

Gocha CHAVLESHVILI, Gaioz  
PARTSKHALADZE - [Georgia]

#257

**Challenges and Promises of Mobile Devices Usage for Spatial Visualization Skills Assessment in Technical Drawing for Engineering Course**

Aleksandar TRIFUNOVIĆ, Svetlana  
ČIČEVIĆ, Dragan LAZAREVIĆ,  
Magdalena DRAGOVIĆ, Aleksandar  
ČUČAKOVIĆ - [Serbia]

#219

**Analytic Approach to Finding Lines in Images and Estimating their Uncertainty**

Matthew HARKER, Paul O’LEARY -  
[Austria]

#228

**Physical – Digital. Defining the Architectural Space**

Jolanta TOFIL - [Poland]

14:40 – 15:00

#262

**Drawing Geometry: a Laborious History in Italian School**

Giorgio BOLONDI - [Italy]

#220

**Geometric Fitting, Registration and Identification for Large Sets of Spatial Measurement Data**

Matthew HARKER, Paul O’LEARY -  
[Austria]

#232

**Design-Based Learning Supported by Empirical-Concrete Learning Objects in Descriptive Geometry**

Fernando Batista BRUNO, Régio  
Pierre DA SILVA, Tânia Luisa  
Koltermann DA SILVA, Fábio  
Gonçalves TEIXEIRA - [Brazil]

15:00 – 15:20

COFFEE BREAK



## (H) ROOM S.1.3

Session Chair  
Luyi LIU  
[Italy]

#198

### Digital Approach to Michelangelo's Design. The Inner Light of Neoplatonic Geometry

Matteo Giuseppe ROMANATO - [Italy]

## (A) ROOM S.1.4

Session Chair  
Milena STAVRIC  
[Austria]

#206

### "Ultima Dea": a Laser Scanner Application for 3D Modelling

Salvatore BARBA, Francesco VILLECCO, Alessandro NADDEO - [Italy]

## (A) ROOM S.0.5

Session Chair  
Andrea AROSA  
[Argentina]

#221

### Unfolding Geometry from Unity: Digital Survey and 3D Modeling of Islamic Decorative Apparatuses in Generalife Palace, Alhambra

Raffaella DE MARCO - [Italy]

## FREE STUDY ROOMS

S.2.4, S.1.5, S.0.4



ICGG

40<sup>TH</sup> ANNIVERSARY

## 13:40 - START OF ACCOMPANYNG PERSON TOUR

**"MUSEO DEL NOVECENTO"**  
VISIT TO THE MUSEUM OF MODERN ART, AND WALK THROUGH THE CITY CENTER



### #237 Abraham Bosse and the Perspective in Practice

Marta SALVATORE - [Italy]

### #207 An Unlikely Rome. Towards Performative Geometry

Carlos Daniel CAMPOS - [Argentina],  
Alessandra CIRAFICI - [Italy]

### #223 Geometrical Universality of Truss-Z System

Machi ZAWIDZKI - [Poland]

### #243 Material Models of Ruled Surfaces as Witnesses to the Development of Mathematical Teaching

Robert PÄBLER, Daniel LORDICK - [Germany]

### #210 Geometric Links Between 2D Patterns and 3D Structures in Islamic Architectures of Andalusia

Barbara MESSINA, Stefano CHIARENZA - [Italy]

### #226 A Perspectograph for a Congregative Way of Perspective

José Vítor CORREIA, Luís ROMÃO - [Portugal]

### #218 Geometry in Advertising Graphics

Massimo MALAGUGINI - [Italy]

### #217 Imperial Porphyry and Golden Leaf: Sierpinski Triangle in a Medieval Roman Cloister

Paola BRUNORI, Paola MAGRONE, Laura TEDESCHINI LALLI - [Italy]

### #229 The Role of the Graphic Element in the Context of Playful Games for Cultural Heritage

Valeria CERA - [Italy]

GARDEN LEVEL - COLONNADE

# MONDAY AFTERNOON, AUGUST 6, 2018 - H 15:20 TO 16:40



IC  
GG

40<sup>TH</sup> ANNIVERSARY

## (A) ROOM S.2.2

**Session Chair**  
Barbara MESSINA  
[Italy]

## (A) ROOM S.2.2

**Session Chair**  
Machi ZAWIDZKI  
[Poland]

## (C) ROOM S.2.3

**Session Chair**  
Peter ROSSO  
[United Kingdom]

## (E) ROOM S.1.2

**Session Chair**  
Jolanta TOFIL  
[Poland]

15:20 – 15:40

#259  
**Visualisation of DSM as  
3D-Mesh for Urban Analyses**  
Paweł RUBINOWICZ - [Poland]

#269  
**Immersive Visions. Some  
Paradigms a of an Exceeding  
Iconography. Capture and  
Monitoring by Spherical  
Cameras and Interactive  
Smartglasses**  
Federico Alberto BRUNETTI - [Italy]

#095  
**Study on Adaptive Threshold  
Image Processing Method for  
Detection of Vaccine Activity**  
Yancong LIU, Chao HUANG - [China]

#046  
**Reinterpret whit Etrus.  
Creativity and Science in  
the Drawing Workshops  
of the Degree Course in  
Communication Design**  
Maria Paola MARABOTTO - [Italy]

15:40 – 16:00

#264  
**Dendrimer Diagrams on the  
Disk and in the Ball**  
Daniel LORDICK - [Germany]

#271  
**Utilization of Plane  
Tessellation for Paper  
Folding and Geometrical  
Transmittance Pattern for  
Lampshade Design**  
Hirota SUZUKI - [Japan]

#098  
**Tensile Structure Form-  
Finding on the Basis of  
Properties of Frame-Grid  
Template**  
Eugene Vladimirovich POPOV, Marina  
Victorovna LAGUNOVA, Sergey  
Igorovich ROTKOV - [Russia]

#274  
**Application of Augmented  
Reality in the Compilation and  
Publication of Cartographic  
Textbooks**  
Hongliang FAN - [China]

16:00 – 16:20

#265  
**A Quest for the Structural  
Response Through Geometric  
Representation of the Design  
of Built Heritage**  
Maria Chiara GIANGREGORIO,  
Giuliana CARDANI, Dario Angelo  
Maria CORONELLI - [Italy]

#278  
**Collection and Visualization of  
Pedestrian Navigation Routes  
Data with Parametric Tools**  
Maja ILIĆ - [Bosnia and Herzegovina]

#275  
**Three-dimensional Modeling  
and Finite Element Analysis of  
Cycloid Hyperbolic Arch Dam**  
Tingna DU, Bo LI - [China]

16:20 – 16:40

COFFEE BREAK

## (H) ROOM S.1.3

### Session Chair

Graziano Mario VALENTI  
[Italy]

#250

### Design Method of Original Motifs and Decorative Patterns Using Geometric Baseline Derived From Japanese Crafts

Kuniko OHTOMO - [Japan]

#260

### DIN-DON-DAN - Bells and their Geometry

Graciela Marina COLAGRECO - [Argentina], Gunter WEISS - [Austria]

#267

### The Influence of the Discovery of Prehistoric Pile Dwellings around the Alps on Architect Hannes Meyer

Hideo TOMITA - [Japan]

## (A) ROOM S.1.4

### Session Chair

José Vítor CORREIA  
[Portugal]

#230

### Geometrically Controlled Digital Workflow from Scratch to Fabrication

Milena STAVRIC, Albert WILTSCHKE, Markus BARTAKY, Elmar HESS - [Austria]

#238

### The Story of NanoJesus: Combining 3D Scanning and Femtosecond Laser Nanolithography for the Fabrication of the Smallest Nativity Scene in the World

Rytė ŽIŪRIENĖ, Linas JONUŠAUSKAS, Eimantas AUGLYS, Darius GAILEVIČIUS, Eglė GIRDZIJAUSKAITĖ - [Lithuania]

#245

### Parametric Modelling and Geometry for the Study of Groins in Compound Vaults

Marco VITALI - [Italy]

## (A) ROOM S.0.5

### Session Chair

Yaqi XU  
[China]

#249

### Between Architecture and Writing: Graphical Geometry to Decipher Systems of Signs. Campo Verano in Rome

Elena IPPOLITI, Francesca GUADAGNOLI - [Italy]

#255

### The Korean Alphabet (Hangeul) and the Translation Processes in Design

Andrea AROSA - [Argentina]

#258

### Cellular Automata Between Life Science and Parametric Design: Examples of Stochastic Models to Simulate Natural Processes and Generate Morphogenetic Artefacts

Irene CAZZARO - [Italy]

## FREE STUDY ROOMS

S.2.4, S.1.5, S.0.4



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40<sup>TH</sup> ANNIVERSARY

## 16:20 - END OF ACCOMPANYNG PERSON TOUR

“MUSEO DEL NOVECENTO”  
VISIT TO THE MUSEUM  
OF MODERN ART,  
AND WALK THROUGH  
THE CITY CENTER



GARDEN LEVEL - COLONNADE



IC  
GG

40<sup>TH</sup> ANNIVERSARY

16:40 – 17:20

## PLENARY

CONFERENCE HALL DE DONATO

TS REPORT

**Round Table with Session Chairs  
and Open Discussion**

**Session Co-Chairs**

Ema JURKIN  
[Croatia]

Yan MA  
[China]

17:20 – 18:00

INVITED LECTURE

**Session Chair**  
Douglas DUNHAM  
[United States]

#IL007

**Blindness of Seeing.  
On the Origin of the Images**

Agostino DE ROSA  
Università IUAV di Venezia, Venice  
[Italy]

18:00 – 23:30

CONFERENCE SOCIAL DINNER

CITY CENTER, RESTAURANT

“LE BANQUE”

Via Bassano Porrone, 6, Milano

CONFERENCE  
SOCIAL DINNER WILL TAKE PLACE  
AT THE RESTAURANT  
**“LE BANQUE”**

Close to Duomo di Milano and Teatro alla Scala,  
in the trendy and cheerful atmosphere  
of a former Eclectic/Baroque-like Bank Hall  
of the beginning of XX century



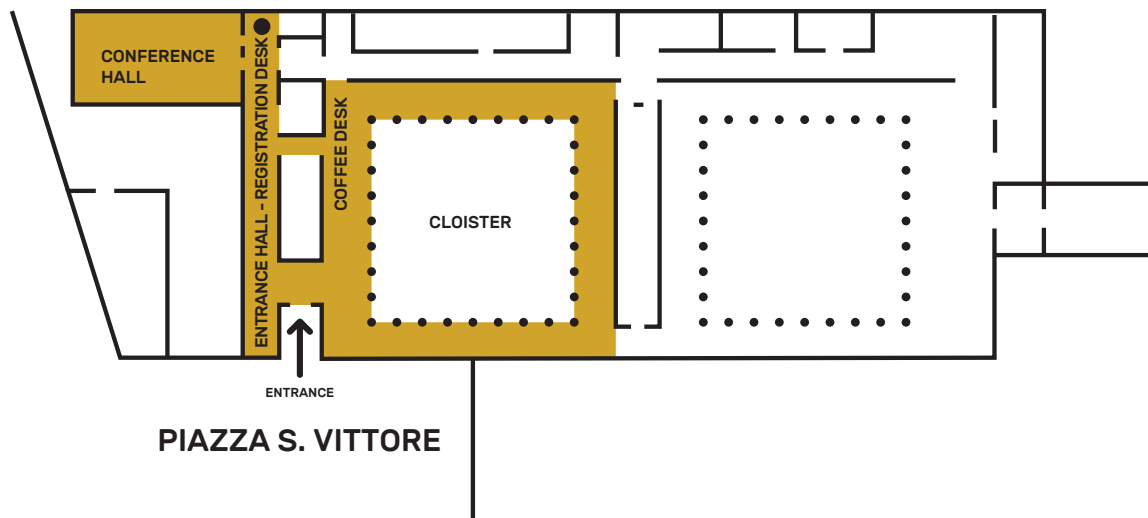
MEETING POINT AT 19:40 UNDER THE GREAT DOME  
OF THE “VITTORIO EMANUELE II” CRYSTAL GALLERY  
**SUBWAY STOP: DUOMO (LINEA 1 OR LINEA 3)**

# CONFERENCE VENUE - AUGUST 7 2018

## MUSEO NAZIONALE DELLA SCIENZA E DELLA TECNOLOGIA "LEONARDO DA VINCI"



### GROUND FLOOR



**TUESDAY MORNING, AUGUST 7, 2018 - H 08:40 TO 10:20**

**MUSEO NAZIONALE DELLA SCIENZA E DELLA TECNOLOGIA**  
**“LEONARDO DA VINCI”**

**FREE VISIT TO THE MUSEUM**



**IC  
GG**

**40<sup>TH</sup> ANNIVERSARY**

**REGISTRATION AND COFFEE DESK**  
ENTRANCE HALL AND CLOISTER

**08:40 – 09:00**

**CLOSING PLENARY**

AUDITORIUM

**“RELOADING GEOMETRY AND GRAPHICS”**

**09:00 – 10:00**

**A GLANCE AT THE FUTURE OF GEOMETRY AND GRAPHICS, AND ISGG**

**Reasons for the Call**

Luigi COCCHIARELLA  
Executive Chairman  
*[Italy]*

**Moderator**

Theodore J. BRANOFF  
Former President of ISGG  
*[United States]*

**Panelists**

Kenjiro SUZUKI  
Former President of ISGG  
*[Japan]*

Gunter WEISS  
Former President of ISGG  
*[Austria]*

Hellmuth STACHEL  
Managing Editor of the Journal  
for Geometry and Graphics - JGG  
*[Austria]*

**Hints from TS Reports**

Jessica ROMOR  
*[Italy]*

Ema JURKIN  
*[Croatia]*

Željka MILIN ŠIPUŠ  
*[Croatia]*

Paweł RUBINOWICZ  
*[Poland]*

Hirotaaka SUZUKI  
*[Japan]*

Yan MA  
*[China]*

**Educational Projects at Politecnico di Milano**

Susanna Sancassani  
Support Service for Research and Innovative Didactics - METID  
*[Italy]*

**Questions and Discussion**

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**BREAK - CLOISTER COLONNADE**

**10:00 – 10:20**

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**TUESDAY MORNING, AUGUST 7, 2018 - H 10:20 TO 12:00**



**IC  
GG**

40<sup>TH</sup> ANNIVERSARY

10:20 – 12:00

## **PLENARY ISGG MEETING AND CLOSING CEREMONY**

### **Chair**

Yasushi YAMAGUCHI  
President of ISGG  
Conference Chairman  
*[Japan]*

### **Co-Chairs**

Baoling HAN  
Vice-President of ISGG for the Regions  
Asia /Australia /Oceania  
*[China]*

Ema JURKIN  
Vice-President of ISGG for the Regions  
Europe /Near East / Africa  
*[Croatia]*

Aura CONCI  
Vice-President of ISGG for the Regions  
North America / South America  
*[Brazil]*

### **Plenary ISGG MEETING**

### **Steve M. Slaby AWARD**

**First Announcement for 19th ICGG 2020**

**Resolution for the 18th ICGG 2018, Milan, Italy**

**LAST SUPPER EXTRA PROGRAM**

13:30

**LEAVE TAKING SNACK & FREE VISIT TO THE MUSEUM**