6OSME PROGRAM

11TH MON MORNING 1 9:00-10:40

A0 PLENARY SESSION

Opening Ceremony

Plenary Lecture:

Gregory Epps Industrial Robotic Origami

Session Chair: Koichi Tateishi

11TH MON MORNING 2 11:05-12:20

A1 SOFTWARE

Session Chair: Ryuhei Uehara

87 Robert J. Lang
Tessellatica: A Mathematica System for Origami Analysis

126 Erik D. Demaine and Jason Ku
Filling a Hole in a Crease Pattern: Isometric Mapping of a Polygon given a Folding of its Boundary

96 Hugo Akitaya, Jun Mitani, Yoshihiro Kanamori and Yukio Fukui
Generating Folding Sequences from Crease Patterns of Flat-Foldable Origami

E1 SELF FOLDING 1

Session Chair: Eiji Iwase

94 Aaron Powledge, Darren Hartl and Richard Malak
Experimental Analysis of Self-Folding SMA-based Sheets for Origami Engineering

183 Minoru Taya
Design of the Origami-like Hinge Line of Space Deployable Structures

135 Daniel Tomkins, Mukulika Ghosh, Jory Denny, and Nancy Amato
Planning Motions for Shape-Memory Alloy Sheets

L1 DYNAMICS

Session Chair: Zhong You

166 Megan Roberts, Sameh Tawfick, Matthew Shlian and John Hart
A Modular Collapsible Folded Paper Tower

161 Sachiko Ishida, Hiroaki Morimura and Ichiro Hagiwara
Sound Insulating Performance on Origami-based Sandwich Trusscore Panels

77 Jesse Silverberg, Junhee Na, Arthur A. Evans, Lauren McLeod, Thomas Hull, Chris D. Santangelo, Ryan C. Hayward, and Itai Cohen
Mechanics of Snap-Through Transitions in Twisted Origami

M1 EDUCATION 1

Session Chair: Patsy Wang-Iverson

52 Sue Pope
Origami for Connecting Mathematical Ideas and Building Relational Understanding of Mathematics

24 Linda Marlina
Origami as Teaching Media for Early Childhood Education in Indonesia (Training for Teachers)

78 Lainey McQuain and Alan Russell
Origami and Teaching Language and Composition

11TH MON AFTERNOON 1 14:00-15:40

A2 SELF FOLDING 2

Session Chair: Kazuya Saito

31 Jun-Hee Na, Christian Santangelo, Robert J. Lang, Thomas Hull and Ryan Hayward
Micro-patterned Polymer Gel Multilayers for Reversibly Self-folding Origami

106 Carol Livermore, Majid Bigdeli Karimi, Philipp Mehner, Tian Liu, Roger Alperin, Sangeeta Bhatia, Martin Culpepper and Robert J. Lang
Engineering Biological Tissues by Directed Assembly and Origami Folding

65 Ying Liu, Russell Mailen, Yong Zhu, Alan Russell, Susan Brandeis, Michael D. Dickey and Jan Genzer
Polymer Sheets that Self-fold in Response to Light

91 Kaori Kuribayashi-Shigetomi
Cell Origami: Producing 3D Tissue Using Origami Folding Technique

E2 ART 1

Session Chair: Yoshinobu Miyamoto

102 Krystyna Burczyk and Wojtek Burczyk
Designing with Bow-Tie Modules

128 Miyuki Kawamura
Two Calculations for Geodesic Modular Works

37 Tomoko Fuse
Spiral Fold from a Tape

62 Jeannine Mosely
Crowdsourcing Origami Sculptures

L2 COMBINATORICS

Session Chair: Thomas Hull

36 Ryuhei Uehara
A Survey and Recent Results About Common Developments of Two or More Boxes

41 Jessica Ginepro and Thomas Hull
Counting Miura-ori Phantom Foldings

73 Naoya Tsuruta, Jun Mitani, Yoshihiro Kanamori and Yukio Fukui
Simple Flat Origami Exploration System with Random Folds

84 Robert J. Lang and Roger Alperin
Origami Graph Paper for Polygon Packing and One-Straight-Cut

M2 EDUCATION 2

Session Chair: Miri Golan

12 Yanping Huang and Peng-Yee Lee
Using Paper Folding to Solve Problems in School Geometry

9 Patsy Wang-Iverson and Nick Timpone
Examining TIMSS Items through the Lens of Origami

59 Emma Frigerio and Maria Luisa Spreafico
Area and Paper Optimization

11TH MON AFTERNOON 2 16:05-18:00

A3 RIGID FOLDING 1

Session Chair: Erik D. Demaine

100 Jin-Ichi Itoh and Chie Nara
Flattening Polyhedra with Two Adjacent Rigid Faces

44 Zachary Abel, Robert Connelly, Erik D. Demaine, Martin L. Demaine, Thomas Hull, Anna Lubiw and Tomohiro Tachi
Rigid Flattening of Polyhedra with Slits

86 Robert J. Lang, Thomas Evans, Spencer P. Magleby and Larry L. Howell
A Graphical Technique for Designing Rigidly Foldable Origami Mechanisms

90 Zachary Abel, Thomas Hull and Tomohiro Tachi
Locked Rigid Origami with Multiple Degrees of Freedom

98 Tomohiro Tachi
Rigid Folding of Periodic Triangulated Origami Tessellations

E3 DESIGN 1

Session Chair: Koshiro Hatori

10 Ilan Garibi
Design Art - Taking the Kami out of Origami

103 David Morgan and Brett Mellor
The Design and Production of a Folded Felt Stool

130 Tine De Ruysser
Wearable Metal Origami

71 Yuji Fukami
General Folding Pattern Solution for Solids based on Polygonal Sections

155 Sachiko Ishida, Taketoshi Nojima and Ichiro Hagiwara
Origami-based Modeling Techniques for Deployable Meandering Tubes

L3 MATH 1

Session Chair: Toshikazu Kawasaki

15 Roger Alperin
Axioms for Origami and Compass Constructions

123 Jordi Guàrdia and Eulàlia Tramuns
Geometric and Arithmetic Relations Concerning Origami

132 José Ignacio Royo Prieto and Eulàlia Tramuns
Abelian and non-Abelian Numbers via 3D-Origami

104 Masahiro Kushida and Toshikazu Kawasaki
On Quadratic Curves Generated from Quasi-Fish Bases

107 Toshikazu Kawasaki
A Method to Fold Generalized Bird Bases

M3 EDUCATION 3

Session Chair: Emma Frigerio

17 Arnold Tubis
Origami-Inspired Deductive Threads in Pre-Geometry

121 Robert Orndorff and Debby Halperin
Hypothesis and Model for Evaluating an Elementary School Origami Program

179 Rishika Daryanani, Celina Gonzalez, Paine Harris, Walshe Izumigawa, Bryce Lyon, Daniel Myers, Perla Myers, Tawni Paradise, Kerry Stanko, Veronica Verplancken, Anna Walsh and Elisabeth Yeruuldelger
Project Mathigami: Exploring Mathematics Through Origami

153 Susanne Hoffmann, Martin Barej, Benedikt Guenther, Martin Trautz, Burkhard Corves and Joerg Feldhusen
Demands on an Adapted Design Process for Foldable Structures

67 Miri Golan
Origami Teaching Re-imagined: The Kindergarten Origametria Programme

12TH TUE MORNING 1 9:00-10:40

A4 PLENARY SESSION

Plenary Lecture:

Masao Okamura Origami Works that Kuzuhara Koto Brought Down to Us

Session Chair: Koichi Tateishi

Translator: Koshiro Hatori

12TH TUE MORNING 2 11:05-12:20

A5 CURVED FOLDING

Session Chair: Robert J. Lang

97 Hugo Akitaya, Jun Mitani, Yoshihiro Kanamori and Yukio Fukui
Curved Origami for Developable Surface Coupling

164 Suryansh Chandra, Shajay Bhooshan and Mustafa El-Sayed
Curved-Folding Convex Polyhedra through Smoothing

168 Erik D. Demaine, Martin L. Demaine, David A. Huffman, Duks Koschitz and Tomohiro Tachi
Designing Curved-Crease Tessellations of Lenses: Qualitative Properties of Rulings

E5 ARCHITECTURE

Session Chair: Rupert Maleczek

43 Pierluigi D'Acunto and Juan José Castellon Gonzalez
Folding Augmented: A Conceptual Design Method to Integrate Structural Folding in Architecture

57 Caterina Cumino, Emma Frigerio, Simona Gallina, Maria Luisa Spreafico and Ursula Zich
Modeling Vaults in Origami: A Bridge between Mathematics and Architecture

125 Martin Barej, Susanne Hoffmann, Martin Trautz and Burkhard Corves
A Systematic Overview of Origami-Based Structures in Technical Applications

L5 ART 2

Session Chair: Jun Maekawa

18 Cheng Chit Leong
Design of Origami Polyhedral Surface by Straight-crease Couplets

64 Shi-Pui Kwan
Mathematics and Art through the Origami of Cuboctahedron

112 Koshiro Hatori
Nishikawa's Mitate Theory and its Relevance

M5 EDUCATION 4

Session Chair: Koichi Tateishi

66 Anat Klemer, John Oberman and Miri Golan
An Assessment of Learning Geometry through Folding Paper by the Origametria Method, on the Visual Thinking of Grade Four Students

113 Akiko Yamanashi
The Report on an Origami Class at a Computer College

138 Norma Boakes
Seven Year Study of Origami's Impact on Spatial Skills of College-Age Students

12TH TUE AFTERNOON 14:25-16:05

A6 SELF FOLDING 3

Session Chair: Kaori Kuribayashi-Shigetomi

48 Edwin Peraza-ernandez, Darren Hartl, Richard Malak, Ozgur Gonen and Ergun Akleman
Self-Folding of Reconfigurable Complex Structures using Programmable Active Laminates

116 Katherine Frei, Edwin A. Peraza-Hernandez, Darren Hartl, Richard Malak
Miura-Ori Rectilinear Locomotion Using SMA Actuators

167 Abhinav Rao and John Hart
Millimeter Scale Self-Folding of a Laminated Paper System

147 Kazuya Saito, Akira Tsukahara and Yoji Okabe
Self-Deploying Origami Models Using Misaligned Crease Patterns

E6 POP-UP 1

Session Chair: Evgueni Filipov

27 Jun Mitani
Self-Intersecting Origami with Cuts

72 Yuto Kase, Jun Mitani, Yoshihiro Kanamori and Yukio Fukui
Flat-Foldable Axisymmetric Structures with Open Edges

115 Yoshinobu Miyamoto
Rotational Erection System (RES): Origami Extended with Cuts

157 Rupert Maleczek
Study on Deployable Linear Folded Stripe Structures

L6 INFINITY

Session Chair: Tomohiro Tachi

40 Ali Bahmani, Kiumars Sharif and Andrew Hudson
Using Origami to Enrich Mathematical Understanding of Fractals

63 Takamichi Sushida, Akio Hizume and Yoshikazu Yamagishi
Origami for Triangular Spiral Tilings

29 Leon Poladian
Using the Fujimoto Approximation Technique to teach Chaos Theory

55 Ushio Ikegami
Base Design of Snowflake Curve Model and its Difficulties

M6 RIGID FOLDING 2

Session Chair: Zhong You

156 Jian S. Dai
Mathematical Models and Configuration Transformation of Origami Cartons for Packaging Industry

171 Zhonghua Xi and Jyh-Ming Lien
Determining Distinct Shapes of Rigid Origami

140 Matthew L. Gong, Spencer Magleby and Larry Howell
Creating Novel Motions with N-Long Chains of Interconnected Spherical Mechanisms

13TH WED MORNING 1 9:00-10:40

A7 ELASTIC

Session Chair: Kazuya Saito

74 Kazuko Fuchi, Philip Buskohl, James Joo, Gregory Reich and Richard Vaia
Physics-based Optimization of Origami Structures through FEM

76 Jesse Silverberg, Arthur A. Evans, Lauren McLeod,, Ryan C. Hayward, Thomas Hull, Chris Santangelo, and Itai Cohen
Mechanics of Miura-ori Lattice Defects

118 Arthur A. Evans, Christian Santangelo, Nakul Bende, Sarah Innes-Gold, Nivedita Sharma, Ryan C. Hayward, Jesse Silverberg and Itai Cohen
Geometriy Controlled Catastrophe and the Link Between Snap Buckling, Origami, and Material Science

137 Evgueni T. Filipov, Tomohiro Tachi and Glaucio H. Paulino
Toward Optimization of Stiffness and Flexibility of Rigid, Flat-foldable Origami Structures

E7 MODULAR

Session Chair: Thomas Hull

19 Andrea Hawksley
Topological Origami Models of Non-Convex Polyhedra

60 sarah-marie belcastro and Thomas Hull
Symmetric Colorings of Polypolyhedra

173 Eli Davis, Erik D. Demaine, Martin L. Demaine and Jennifer Ramseyer
Weaving a Uniformly Thick Sheet from Rectangles

85 Robert J. Lang and Barry Hayes
Pentasia: an Aperiodic Origami Surface

L7 SYMMETRIC DESIGN

Session Chair: Chris Palmer

119 Shuang Tang, Jun Mitani, Yukio Fukui and Yoshihiro Kanamori
Designing Nth Order Rotational Symmetry Origami From 4th Order Symmetric Crease Patterns

39 Herng Yi Cheng
Composing Right Frusta to fold Axially Symmetric Origami

148 Ray Schamp and Goran Konjevod
Characterization of Origami Corrugation Crease Patterns

M7 COMPOSITE STRUCTURE 1

Session Chair: Sachiko Ishida

139 Yang Yang, Xilu Zhao, Sunao Tokura and Ichiro Hagiwara
A Study on Crash Energy Absorption Ability of Lightweight Structure by Using Truss Core Panel

25 Joseph Gattas and Zhong You
Improvement and Optimisation of non-Miura Foldcores under Impact Loading

129 Yves Klett, Marc Grzeschik and Peter Middendorf
Comparison of Mechanical Properties of Periodic Non-flat Tessellations

13TH WED MORNING 2 11:05-12:20

A8 DESIGN 2

Session Chair: Martin L. Demaine

68 Paul Jackson
Paper Folding as a Topic of Design Education

165 Maori Kimura
[POP-UP PATTERN] Fabric of the Origami Pattern to Make with a Puff Print

81 Matthew Gardiner
ORI* On the Aesthetics and Language of Folding and Technology: Scale, Dimensionality, and Material

E8 HINGE

Session Chair: Yves Klett

28 Jianguo Cai and Jian Feng
Foldable Plate Structures with Rolling Joints

150 Bryce J. Edmondson, Robert J. Lang, Spencer P. Magleby and Larry L. Howell
An Offset Construction Technique for Thick Rigid Foldable Origami

23 Naohiko Watanabe
Application of Rigid-foldability Condition to Yield Line Analysis

L8 PRECISION

Session Chair: Koshiro Hatori

136 Fumihito Imai and Shinsuke Hishitani
The Effect of Imagery Controllability on Origami Performance

170 Michael Winckler
"The Next Model is for Beginners" First steps in Differential Origami

154 Goran Konjevod
Origami Beyond Geometry

M8 MATH 2

Session Chair: Toshikazu Kawasaki

105 Fadoua Ghourabi, Tetsuo Ida and Kazuko Takahashi
Automated Construction and Proving of Knot Fold by Eos System

134 Sy Chen
Equal Division of Any Polygon Side by Folding

184 Kazuo Haga
How to Fold an A4-paper Dividing into 101 Equal Length Parts without Any Measuring Tools

13TH WED AFTERNOON 1 14:00-15:40

A9 CONSTRUCTION

Session Chair: Tomohiro Tachi

124 Rostislav Chudoba, Jan van der Woerd and Josef Hegger
Oricreate: Modeling Framework for Design and Manufacturing of Folded Plate Structures

158 Georg Grasser, Günther H. Filz and Rupert Maleczek
Self-organised Folding with Gravity and Friction as Guiding Concept

83 Kevin Box and Robert J. Lang
Master Peace: An Evolution of Monumental Origami

E9 TESSELLATION 1

Session Chair: Jason Ku

82 Robert J. Lang
Spiderwebs, Tilings, and Flagstone Tessellations

99 Thomas R. Crain
A New Scheme to Describe Twist-fold Tessellations

127 Erik D. Demaine, Martin L. Demaine and Kayhan F. Qaiser
Scaling a Surface down to Any Fraction by Twist Folding

L9 CULTURE & HISTORY

Session Chair: Yoshinobu Miyamoto

35 Jun Maekawa
Computational Problems Related to Paper Crane in the Edo Period

111 Koshiro Hatori
Saburo Murata and His Discovery of Maekawa's and Kawasaki's Theorems

176 Peter Engel
Origami and the Language of Design

M9 ART 3

Session Chair: Patsy Wang-Iverson

145 Chris Palmer
Paper and Textile Folding: A Synergistic Relationship

146 Christopher Itoh
The Elusive Technique of Folding Anatomical Subjects

131 Yves Klett
Point of View: Joys and Uses of 3D Anamorphic Origami

13TH WED AFTERNOON 2 16:05-17:20

A10 COMPOSITE STRUCTURE 2

Session Chair: Yves Klett

61 Rui Peng and Yan Chen
The Metamaterial Generated from Rigid-origami Pattern

26 Joseph Gattas and Zhong You
Design and Analysis of Morphing Folded Shell Structures

33 Jonathan Ho and Zhong You
Thin-Walled Deployable Grid Structures

E10 TESSELLATION 2

Session Chair: Ray Schamp

110 Eduard Taganap and Ma. Louise Antonette De Las Peñas
A Color Symmetry Approach to the Construction of Crystallographic Flat Origami

101 Tianyi Wang, Jun Mitani, Yoshihiro Kanamori and Yukio Fukui
A Study on Orthogonal Pleat Tessellation and Its Folding Sequence

142 Goran Konjevod
On Pleat Rearrangements in Pureland Tessellations

L10 POP-UP 2

Session Chair: Martin L. Demaine

160 Guowu Wei and Jian S. Dai
Folding Polygons to Deployable Convex Polyhedrons

46 Thais Regina Ueno Yamada
Origamic Architecture and Van Hiele Model in the Graduate Classroom of Descriptive Geometry

47 Thais Regina Ueno Yamada, Roberto Alcarria Do Nascimento and Marco Antonio Pereira
Geometric Strategies to Create Origamic Architecture Models

M10 ART 4

Session Chair: Jun Maekawa

163 Wensdy Whitehead
Shovel Folding: Algorithmic Origami Design of Words and Other Line Drawings

133 Annette Hatch
Using the Fibonacci Series to Fold a Golden Rectangle

117 Mark Neyrinck
Cosmological Origami: Folding up the Dark-Matter Sheet into the Cosmic Web

ALL DAY	PRESENTATION ON 12TH	13:35-14:25

ROOM B POSTER SESSION

14 Jorge Pardo
Origami Museum

38 Xiang Zhou, Hai Wang and Zhong You
Design of Double-Walled Origami-Core Aircraft Fuselage Shell

51 Bernat Espigule Pons
Folding Self-similar Tilings Based on Prototiles Constructed from Segments of Regular Polygons

53 Katrin Shumakov and Yuri Shumakov
Activating Left and Right Brain Functions with Origami

54 Ketao Zhang, Chen Qiu and Jian S. Dai
Screw Algebra Based Kinematic and Static Modeling Approach for Origami Enabled Structures

70 Shozo Ishihara
Deformed Polyhedral Skeletons

92 Takashi Enomoto, Hiroyuki Tanabe, Takeshi Kawakami and Mariko Sasakura
Origami on the iPad

122 Bo Yu, Maria Savchenko and Ichiro Hagiwara
Approach for Unfolding 3D Meshes for Crafting Paper Models

143 Koryo Miura and Naoko Tsuji
Three-point Method of Folding Rectangular Paper into Miura-ori

152 Susanne Hoffmann, Benedikt Günther, Martin Barej, Martin Trautz, Jörg Feldhusen and Burkhard Corves
Comparison of Design Processes in Architecture and Mechanical Engineering

162 Eiji Iwase and Isao Shimoyama
Magnetic Self-Assembly for Three-Dimensional Microstructures

178 Levi Dudte and L. Mahadevan
A Simple Mechanical Simulation of Curved and Tessellated Origami Structures