

32nd International Symposium on Algorithms and Computation

ISAAC 2021, December 6–8, 2021, Fukuoka, Japan

Edited by

Hee-Kap Ahn


Kunihiko Sadakane



Editors

Hee-Kap Ahn 

Pohang University of Science and Technology, Korea
heekap@postech.ac.kr

Kunihiko Sadakane 

The University of Tokyo, Japan
sada@mist.i.u-tokyo.ac.jp

ACM Classification 2012

Theory of computation; Mathematics of computing

ISBN 978-3-95977-214-3

Published online and open access by

Schloss Dagstuhl – Leibniz-Zentrum für Informatik GmbH, Dagstuhl Publishing, Saarbrücken/Wadern, Germany. Online available at <https://www.dagstuhl.de/dagpub/978-3-95977-214-3>.

Publication date

December, 2021

Bibliographic information published by the Deutsche Nationalbibliothek

The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available in the Internet at <https://portal.dnb.de>.

License

This work is licensed under a Creative Commons Attribution 4.0 International license (CC-BY 4.0):
<https://creativecommons.org/licenses/by/4.0/legalcode>.



In brief, this license authorizes each and everybody to share (to copy, distribute and transmit) the work under the following conditions, without impairing or restricting the authors' moral rights:

- Attribution: The work must be attributed to its authors.

The copyright is retained by the corresponding authors.

Digital Object Identifier: 10.4230/LIPIcs.ISAAC.2021.0

ISBN 978-3-95977-214-3

ISSN 1868-8969

<https://www.dagstuhl.de/lipics>

LIPICs – Leibniz International Proceedings in Informatics

LIPICs is a series of high-quality conference proceedings across all fields in informatics. LIPICs volumes are published according to the principle of Open Access, i.e., they are available online and free of charge.

Editorial Board

- Luca Aceto (*Chair*, Reykjavik University, IS and Gran Sasso Science Institute, IT)
- Christel Baier (TU Dresden, DE)
- Mikolaj Bojanczyk (University of Warsaw, PL)
- Roberto Di Cosmo (Inria and Université de Paris, FR)
- Faith Ellen (University of Toronto, CA)
- Javier Esparza (TU München, DE)
- Daniel Král' (Masaryk University - Brno, CZ)
- Meena Mahajan (Institute of Mathematical Sciences, Chennai, IN)
- Anca Muscholl (University of Bordeaux, FR)
- Chih-Hao Luke Ong (University of Oxford, GB)
- Phillip Rogaway (University of California, Davis, US)
- Eva Rotenberg (Technical University of Denmark, Lyngby, DK)
- Raimund Seidel (Universität des Saarlandes, Saarbrücken, DE and Schloss Dagstuhl – Leibniz-Zentrum für Informatik, Wadern, DE)

ISSN 1868-8969

<https://www.dagstuhl.de/lipics>

■ Contents

Preface	
<i>Hee-Kap Ahn and Kunihiko Sadakane</i>	0:xi
Program Committee	
.....	0:xiii
List of External Reviewers	
.....	0:xv

Invited Talks

Streaming Pattern Matching	
<i>Tatiana Starikovskaya</i>	1:1–1:1
Spanning Properties of Variants of the Delaunay Graph	
<i>Prosenjit Bose</i>	2:1–2:1

Regular Papers

Subquadratic Algorithms for Some 3SUM-Hard Geometric Problems in the Algebraic Decision Tree Model	
<i>Boris Aronov, Mark de Berg, Jean Cardinal, Esther Ezra, John Iacono, and Micha Sharir</i>	3:1–3:15
Approximate Maximum Halfspace Discrepancy	
<i>Michael Matheny and Jeff M. Phillips</i>	4:1–4:15
The VC-Dimension of Limited Visibility Terrains	
<i>Matt Gibson-Lopez and Zhongxiu Yang</i>	5:1–5:17
Clustering with Neighborhoods	
<i>Hongyao Huang, Georgiy Klimenko, and Benjamin Raichel</i>	6:1–6:17
Approximating Longest Spanning Tree with Neighborhoods	
<i>Ahmad Biniaz</i>	7:1–7:11
Self-Improving Voronoi Construction for a Hidden Mixture of Product Distributions	
<i>Siu-Wing Cheng and Man Ting Wong</i>	8:1–8:13
Connected Coordinated Motion Planning with Bounded Stretch	
<i>Sándor P. Fekete, Phillip Keldenich, Ramin Kosfeld, Christian Rieck, and Christian Scheffer</i>	9:1–9:16
Enclosing Depth and Other Depth Measures	
<i>Patrick Schneider</i>	10:1–10:15
Illuminating the x -Axis by α -Floodlights	
<i>Bengt J. Nilsson, David Orden, Leonidas Palios, Carlos Seara, and Paweł Żyliński</i>	11:1–11:12

32nd International Symposium on Algorithms and Computation (ISAAC 2021).

Editors: Hee-Kap Ahn and Kunihiko Sadakane



Leibniz International Proceedings in Informatics

Schloss Dagstuhl – Leibniz-Zentrum für Informatik, Dagstuhl Publishing, Germany

On Geometric Priority Set Cover Problems <i>Aritra Banik, Rajiv Raman, and Saurabh Ray</i>	12:1–12:14
The Complexity of Sharing a Pizza <i>Patrick Schnider</i>	13:1–13:15
Dynamic Data Structures for k -Nearest Neighbor Queries <i>Sarita de Berg and Frank Staals</i>	14:1–14:14
Preference-Based Trajectory Clustering – An Application of Geometric Hitting Sets <i>Florian Barth, Stefan Funke, and Claudius Proissl</i>	15:1–15:14
Efficiently Partitioning the Edges of a 1-Planar Graph into a Planar Graph and a Forest <i>Sam Barr and Therese Biedl</i>	16:1–16:15
On the Kernel and Related Problems in Interval Digraphs <i>Mathew C. Francis, Pavol Hell, and Dalu Jacob</i>	17:1–17:17
Interval Query Problem on Cube-Free Median Graphs <i>Soh Kumabe</i>	18:1–18:14
Untangling Circular Drawings: Algorithms and Complexity <i>Sujoy Bhore, Guangping Li, Martin Nöllenburg, Ignaz Rutter, and Hsiang-Yun Wu</i>	19:1–19:17
Algorithms and Complexity on Indexing Elastic Founder Graphs <i>Massimo Equi, Tuukka Norri, Jarno Alanko, Bastien Cazaux, Alexandru I. Tomescu, and Veli Mäkinen</i>	20:1–20:18
Partitioning H -Free Graphs of Bounded Diameter <i>Christoph Brause, Petr Golovach, Barnaby Martin, Daniël Paulusma, and Siani Smith</i>	21:1–21:14
Clique-Based Separators for Geometric Intersection Graphs <i>Mark de Berg, Sándor Kisfaludi-Bak, Morteza Monemizadeh, and Leonidas Theodorou</i>	22:1–22:15
Near-Optimal Distance Oracles for Vertex-Labeled Planar Graphs <i>Jacob Evald, Viktor Fredslund-Hansen, and Christian Wulff-Nilsen</i>	23:1–23:14
A Characterization of Individualization-Refinement Trees <i>Markus Anders, Jendrik Brachter, and Pascal Schweitzer</i>	24:1–24:14
Truly Subquadratic Exact Distance Oracles with Constant Query Time for Planar Graphs <i>Viktor Fredslund-Hansen, Shay Mozes, and Christian Wulff-Nilsen</i>	25:1–25:12
Interval Edge Coloring of Bipartite Graphs with Small Vertex Degrees <i>Anna Małafiejaska, Michał Małafiejski, Krzysztof M. Ociekiewicz, and Krzysztof Pastuszak</i>	26:1–26:12
Selected Neighbor Degree Forest Realization <i>Amotz Bar-Noy, David Peleg, Dror Rawitz, and Elad Yehezkel</i>	27:1–27:15

MAX CUT in Weighted Random Intersection Graphs and Discrepancy of Sparse Random Set Systems <i>Sotiris Nikolettseas, Christoforos Raptopoulos, and Paul Spirakis</i>	28:1–28:16
The Impact of Geometry on Monochrome Regions in the Flip Schelling Process <i>Thomas Bläsius, Tobias Friedrich, Martin S. Krejca, and Louise Molitor</i>	29:1–29:17
Piecewise-Linear Farthest-Site Voronoi Diagrams <i>Franz Aurenhammer, Evanthia Papadopoulou, and Martin Suderland</i>	30:1–30:11
Effective Resistance and Capacitance in Simplicial Complexes and a Quantum Algorithm <i>Mitchell Black and William Maxwell</i>	31:1–31:27
Anonymity-Preserving Space Partitions <i>Úrsula Hébert-Johnson, Chinmay Sonar, Subhash Suri, and Vaishali Surianarayanan</i>	32:1–32:16
Impatient PPSZ – A Faster Algorithm for CSP <i>Shibo Li and Dominik Scheder</i>	33:1–33:20
Fine-Grained Meta-Theorems for Vertex Integrity <i>Michael Lampis and Valia Mitsou</i>	34:1–34:15
Essentially Tight Kernels For (Weakly) Closed Graphs <i>Tomohiro Koana, Christian Komusiewicz, and Frank Sommer</i>	35:1–35:15
Filling Crosswords Is Very Hard <i>Laurent Gourvès, Ararat Harutyunyan, Michael Lampis, and Nikolaos Melissinos</i>	36:1–36:16
Grid Recognition: Classical and Parameterized Computational Perspectives <i>Siddharth Gupta, Guy Sa’ar, and Meirav Zehavi</i>	37:1–37:15
An Improved Approximation Algorithm for the Matching Augmentation Problem <i>Joseph Cheriyan, Robert Cummings, Jack Dippel, and Jasper Zhu</i>	38:1–38:17
Multimodal Transportation with Ridesharing of Personal Vehicles <i>Qian-Ping Gu and JiaJian Liang</i>	39:1–39:16
Algorithms for Normalized Multiple Sequence Alignments <i>Eloi Araujo, Luiz C. Rozante, Diego P. Rubert, and Fábio V. Martinez</i>	40:1–40:16
Separated Red Blue Center Clustering <i>Marzieh Eskandari, Bhavika Khare, and Nirman Kumar</i>	41:1–41:13
On the Extended TSP Problem <i>Julián Mestre, Sergey Pupyrev, and Seeun William Umboh</i>	42:1–42:14
Probabilistic Analysis of Euclidean Capacitated Vehicle Routing <i>Claire Mathieu and Hang Zhou</i>	43:1–43:16
Exact and Approximation Algorithms for Many-To-Many Point Matching in the Plane <i>Sayan Bandyopadhyay, Anil Maheshwari, and Michiel Smid</i>	44:1–44:14

Augmenting Graphs to Minimize the Radius <i>Joachim Gudmundsson, Yuan Sha, and Fan Yao</i>	45:1–45:20
Linear-Time Approximation Scheme for k -Means Clustering of Axis-Parallel Affine Subspaces <i>Kyungjin Cho and Eunjin Oh</i>	46:1–46:13
Feedback Vertex Set on Geometric Intersection Graphs <i>Shinwoo An and Eunjin Oh</i>	47:1–47:12
Streaming Algorithms for Graph k -Matching with Optimal or Near-Optimal Update Time <i>Jianer Chen, Qin Huang, Iyad Kanj, Qian Li, and Ge Xia</i>	48:1–48:17
Making Three out of Two: Three-Way Online Correlated Selection <i>Yongho Shin and Hyung-Chan An</i>	49:1–49:17
Tight Competitive Analyses of Online Car-Sharing Problems <i>Ya-Chun Liang, Kuan-Yun Lai, Ho-Lin Chen, and Kazuo Iwama</i>	50:1–50:14
Skeletons and Minimum Energy Scheduling <i>Antonios Antoniadis, Gunjan Kumar, and Nikhil Kumar</i>	51:1–51:16
Machine Covering in the Random-Order Model <i>Susanne Albers, Waldo Gálvez, and Maximilian Janke</i>	52:1–52:16
Nearly-Tight Lower Bounds for Set Cover and Network Design with Deadlines/Delay <i>Noam Touitou</i>	53:1–53:16
Cryptographic Hardness Under Projections for Time-Bounded Kolmogorov Complexity <i>Eric Allender, John Gouwar, Shuichi Hirahara, and Caleb Robelle</i>	54:1–54:17
Identity Testing Under Label Mismatch <i>Clément L. Canonne and Karl Wimmer</i>	55:1–55:17
Unique-Neighbor-Like Expansion and Group-Independent Cossystolic Expansion <i>Tali Kaufman and David Mass</i>	56:1–56:17
Group Evacuation on a Line by Agents with Different Communication Abilities <i>Jurek Czyzowicz, Ryan Killick, Evangelos Kranakis, Danny Krizanc, Lata Narayanan, Jaroslav Opatrny, Denis Pankratov, and Sunil Shende</i>	57:1–57:24
Lower Bounds for Induced Cycle Detection in Distributed Computing <i>François Le Gall and Masayuki Miyamoto</i>	58:1–58:19
Distributed Approximations of f -Matchings and b -Matchings in Graphs of Sub-Logarithmic Expansion <i>Andrzej Czygrinow, Michał Hanćkowiak, and Marcin Witkowski</i>	59:1–59:13
Inverse Suffix Array Queries for 2-Dimensional Pattern Matching in Near-Compact Space <i>Dhrumil Patel and Rahul Shah</i>	60:1–60:14
Dynamic Boolean Formula Evaluation <i>Rathish Das, Andrea Lincoln, Jayson Lynch, and J. Ian Munro</i>	61:1–61:19

Shortest Beer Path Queries in Outerplanar Graphs <i>Joyce Bacic, Saeed Mehrabi, and Michiel Smid</i>	62:1–62:16
Space-Efficient Algorithms for Reachability in Directed Geometric Graphs <i>Sujoy Bhore and Rahul Jain</i>	63:1–63:17
Repetition- and Linearity-Aware Rank/Select Dictionaries <i>Paolo Ferragina, Giovanni Manzini, and Giorgio Vinciguerra</i>	64:1–64:16
Pattern Masking for Dictionary Matching <i>Panagiotis Charalampopoulos, Huiping Chen, Peter Christen, Grigorios Loukides, Nadia Pisanti, Solon P. Pissis, and Jakub Radoszewski</i>	65:1–65:19
Resilient Level Ancestor, Bottleneck, and Lowest Common Ancestor Queries in Dynamic Trees <i>Luciano Gualà, Stefano Leucci, and Isabella Ziccardi</i>	66:1–66:17
Computing Shapley Values for Mean Width in 3-D <i>Shuhao Tan</i>	67:1–67:17
Simple Envy-Free and Truthful Mechanisms for Cake Cutting with a Small Number of Cuts <i>Takao Asano</i>	68:1–68:17
Adaptive Regularized Submodular Maximization <i>Shaojie Tang and Jing Yuan</i>	69:1–69:13
Γ -Graphic Delta-Matroids and Their Applications <i>Donggyu Kim, Duksang Lee, and Sang-il Oum</i>	70:1–70:13
An Approximation Algorithm for Maximum Stable Matching with Ties and Constraints <i>Yu Yokoi</i>	71:1–71:16
A Faster Algorithm for Maximum Flow in Directed Planar Graphs with Vertex Capacities <i>Julian Enoch, Kyle Fox, Dor Mesica, and Shay Mozes</i>	72:1–72:16
Maximum-Weight Matching in Sliding Windows and Beyond <i>Leyla Biabani, Mark de Berg, and Morteza Monemizadeh</i>	73:1–73:16
Quantum Advantage with Shallow Circuits Under Arbitrary Corruption <i>Atsuya Hasegawa and François Le Gall</i>	74:1–74:16

■ Preface

This volume contains the papers presented at the 32nd International Symposium on Algorithms and Computation (ISAAC 2021). ISAAC 2021 was held in a hybrid manner on December 6–8, 2021 and was organized by Kyushu University, Japan. ISAAC 2021 provided a forum for researchers working in the areas of algorithms, theory of computation, and computational complexity. The technical program of the conference included 72 contributed papers. We received 215 submissions in response to the call for papers. Each submission received at least three reviews. The program committee held electronic meetings using EasyChair. In the end, the Program Committee selected 72 of the submissions for presentation at the symposium.

The conference included two invited presentations, delivered by Prosenjit Bose (Carleton University) and Tatiana Starikovskaya (The École normale supérieure, Paris). Abstracts of their talks are included in this volume. We wish to thank all the authors who submitted extended abstracts for consideration, the program committee members for their scholarly efforts, and all external reviewers who assisted in the evaluation process. We are grateful to Kayamori Foundation of Information Science Advancement, Support Center for Advanced Telecommunications Technology Research (SCAT), KDDI Foundation, Algorithmic Foundations for Social Advancement (AFSA) by Grant-in-Aid for Transformative Research Areas, MEXT, Japan, and Fusion of Computer Science, Engineering and Mathematics Approaches for Expanding Combinatorial Reconfiguration by Grant-in-Aid for Transformative Research Areas, MEXT, Japan, for financial support and the local organizers of ISAAC 2021. Finally, we acknowledge the endorsement from Special Interest Group on Algorithms (SIGAL) of IPSJ.

December 2021

Hee-Kap Ahn and Kunihiko Sadakane



■ Program Committee

Hee-Kap Ahn (co-chair, Pohang University of Science and Technology (POSTECH))
Kevin Buchin (TU Eindhoven)
Sankardeep Chakraborty (The University of Tokyo)
T-H. Hubert Chan (University of Hong Kong)
Johannes Fischer (TU Dortmund)
Travis Gagie (Dalhousie University)
Mordecai Golin (Hong Kong University of Science and Technology)
Hiro Ito (The University of Electro-Communications)
Akinori Kawachi (Mie University)
Yusuke Kobayashi (Kyoto University)
Chung-Shou Liao (National Tsing Hua University, Taiwan)
Toshimitsu Masuzawa (Osaka University)
Yota Otachi (Nagoya University)
Nicola Prezza (Ca' Foscari University of Venice)
Venkatesh Raman (The Institute of Mathematical Sciences, Chennai)
Kunihiko Sadakane (co-chair, The University of Tokyo)
Srinivasa-Rao Satti (Norwegian University of Science and Technology)
Saket Saurabh (The Institute of Mathematical Sciences)
Chan-Su Shin (Hankuk University of Foreign Studies)
Wing-Kin Sung (National University of Singapore)
Suguru Tamaki (University of Hyogo)
Sébastien Tixeuil (Sorbonne Université)
Haitao Wang (Utah State University)
Prudence Wong (University of Liverpool)
Jialin Zhang (China Academy of Sciences)



■ List of External Reviewers

Ahmed Abdelkader
Peyman Afshani
Jarno Alanko
Sharareh Alipour
Hyung-Chan An
Ei Ando
Haris Angelidakis
Simon Apers
Abdullah Arslan
Yuichi Asahiro
Tetsuo Asano
Kyriakos Axiotis
Sang Won Bae
Sayan Bandyapadhyay
Aritra Banik
Max Bannach
Jérémy Barbay
Manu Basavaraju
Sabyasachi Basu
Xiaohui Bei
Rémy Belmonte
Adam Bene Watts
Matthias Bentert
Christoph Berkholz
Nico Bertram
Ivona Bezakova
Anup Bhattacharya
Sujoy Bhore
Davide Bilò
Ahmad Biniaz
Arijit Bishnu
Arindam Biswas
Eric Blais
Lelia Blin
Greg Bodwin
François Bonnet
Silvia Bonomi
Quentin Bramas
Gerth Stølting Brodal
Janna Burman
Martin Böhm
Sergio Cabello
Pilar Cano
Yixin Cao
Paz Carmi
Carl Johan Casselgren
Timothy M. Chan
Ching-Lueh Chang
Hsien-Chih Chang
Vincent Chau
Ho-Lin Chen
Po-An Chen
Wei Chen
Yijia Chen
Ashish Chiplunkar
Rajesh Chitnis
Jongmin Choi
Jaehoon Chung
Andre Augusto Cire
Alessio Conte
Sabine Cornelsen
Nicola Cotumaccio
Mina Dalirrooyfard
Gautam K Das
Syamantak Das
Alexis de Colnet
Argyrios Deligkas
Christian Deppe
Palash Dey
Patrick Dinklage
Christoph Dürr
Eduard Eiben
Edith Elkind
Jonas Ellert
Christian Engels
Massimo Equi
Hiroshi Eto
Yuri Faenza
Matthew Fahrbach
Chenglin Fan
Giovanni Farina
Mohammad Farshi
Qilong Feng
Jeremy Fineman
Till Fluschnik
Pierre Fraigniaud
Vincent Froese
Hiroshi Fujiwara
Jakub Gajarský
Vijay Ganesh



Robert Galian	Pallavi Jain
Jie Gao	Rahul Jain
Xiaofeng Gao	Ragesh Jaiswal
Naveen Garg	Wojciech Janczewski
Daya Gaur	Varunkumar Jayapaul
Pawel Gawrychowski	Shaofeng H.-C. Jiang
Tzvika Geft	Ce Jin
Anirban Ghosh	Kai Jin
Arijit Ghosh	Seungbum Jo
Daniel Gibney	Naonori Kakimura
Nicola Gigante	Hirotsugu Kakugawa
Anastasios Giovanidis	Shahin Kamali
Marc Glisse	Sayaka Kamei
Petr Golovach	Naoyuki Kamiyama
Garance Gourdel	Frank Kammer
Fernando Granha Jeronimo	Panagiotis Kanellopoulos
Qianping Gu	Matthew Katz
Manoj Gupta	Akitoshi Kawamura
Sushmita Gupta	Yasushi Kawase
Gregory Gutin	Shuji Kijima
Adrián Gómez Brandón	Hee-Chul Kim
Daniel Hader	Jae-Hoon Kim
Koki Hamada	Mincheol Kim
Kai Han	Yonghwan Kim
Tesshu Hanaka	Csaba Király
Sariel Har-Peled	Sándor Kisfaludi-Bak
Kun He	Naoki Kitamura
Meng He	Masashi Kiyomi
Qizheng He	Jonathan Klawitter
Klaus Heeger	Boris Klemz
Jacob Hendricks	Peter Kling
Magnus Lie Hetland	Yasuaki Kobayashi
Shuichi Hirahara	Frederic Koehler
Hiroshi Hirai	Sudeshna Kolay
Petr Hliněný	Spyros Kontogiannis
Michael Hoffmann	Matias Korman
Hsiao-Yu Hu	Artur Kraska
Ziyun Huang	Amit Kumar
Ling-Ju Hung	Noboru Kunihiro
Tomohiro I	Florian Kurpicz
David Ilcinkas	Damianos Kypriadis
Fotis Iliopoulos	Arnaud Labourel
Sungjin Im	Manuel Lafond
Tanmay Inamdar	Michael Lampis
Toshimasa Ishii	Alexandra Lassota
Yuni Iwamasa	Francois Le Gall
Taisuke Izumi	Seungjun Lee
Ashwin Jacob	Stefano Leucci

Bo Li	Eunjin Oh
Fei Li	Yoshio Okamoto
Jian Li	Karolina Okrasa
Lvzhou Li	Simon Omlor
Minming Li	Hirotaka Ono
Tongyang Li	Fukuhito Ooshita
Ya-Chun Liang	Katarzyna Paluch
Ching-Chi Lin	Fahad Panolan
Tien-Ching Lin	Charis Papadopoulos
Chih-Hung Liu	Pál András Papp
Fu-Hong Liu	Debasish Pattanayak
Hsiang-Hsuan Liu	Ramamohan Paturi
William Lochet	Will Perkins
Raul Lopes	Geevarghese Philip
Kelin Luo	Giulio Ermanno Pibiri
Maarten Löffler	Rameshwar Pratap
Ramanujan M. Sridharan	Simon Puglisi
Diptapriyo Majumdar	Li Qian
Yury Makarychev	Saladi Rahul
Yoshifumi Manabe	B. V. Raghavendra Rao
Partha Sarathi Mandal	Ivan Rapaport
Jan Marcinkowski	Gaurav Rattan
Andrea Marino	Alexander Ravsky
Fabien Mathieu	Giuseppe Romana
Akihiro Matsuura	Christian Rosenke
Michał Małafiejski	Sanjukta Roy
Andrew McGregor	Davide Rucci
Neeldhara Misra	Abhishek Sahu
Eiji Miyano	Toshiki Saitoh
Atsushi Miyauchi	Thatchaphol Saranurak
Shuichi Miyazaki	Rik Sarkar
Debajyoti Mondal	Jayalal Sarma
Fabrizio Montecchiani	Kevin Schewior
Naoyuki Morimoto	Jens Schlöter
Pat Morin	Christiane Schmidt
Miguel A. Mosteiro	Melanie Schmidt
Mitsuo Motoki	Pascal Schweitzer
Anish Mukherjee	Louisa Seelbach Benkner
Joydeep Mukherjee	Shinnosuke Seki
Veli Mäkinen	Aditi Sethia
Atsuki Nagao	Kazuhisa Seto
Junya Nakamura	Mordechai Shalom
Shin-ichi Nakayama	Xiaohan Shan
N.S. Narayanaswamy	Vikram Sharma
Yakov Nekrich	Masahiro Shibata
Mikhail Nesterenko	Nobutaka Shimizu
Prajakta Nimbhorkar	Sebastian Siebertz
Harumichi Nishimura	Kirill Simonov

0:xviii External Reviewers

Sahil Singla
Friedrich Slivovsky
Michiel Smid
Roberto Solis-Oba
Olivier Spanjaard
Richard Spence
Frits Spieksma
Gawiejnowicz Stanislaw
Milos Stojakovic
Martin Suderland
Yuichi Sudo
Xiaoming Sun
Vaishali Surianarayanan
Akira Suzuki
Yasuhiro Takahashi
Asahi Takaoka
Kenjiro Takazawa
Eiji Takimoto
Prafullkumar Tale
Takeyuki Tamura
Zihan Tan
Zhihao Gavin Tang
Alessandra Tappini
Erin Taylor
Jan Arne Telle
Junichi Teruyama
Takahisa Toda
Vera Traub
Amitabha Tripathi
Meng-Tsung Tsai
Konstantinos Tsakalidis
Kei Uchizawa
Jorge Urrutia
Przemysław Uznański
Tom van der Zanden
André van Renssen
Daniel Vaz
Sebastiano Vigna
Antoine Vigneron
Alexandros Voudouris
Magnus Wahlström
Bartosz Walczak
Tomasz Walen
Matthias Walter
Changjun Wang
Kai Wang
Yipu Wang
Justin Ward
Kunihiro Wasa
Osamu Watanabe
Hao-Ting Wei
Andreas Wiese
Sebastian Wild
Xiaowei Wu
Allen Xiao
Dachuan Xu
Jie Xue
Yutaro Yamaguchi
Masaki Yamamoto
Katsuhisa Yamanaka
Koichi Yamazaki
Kenji Yasunaga
Yitong Yin
Yu Yokoi
Sang Duk Yoon
Yuichi Yoshida
Sixie Yu
Meirav Zehavi
Chihao Zhang
Guochuan Zhang
Jingru Zhang
Qiankun Zhang
Yuhao Zhang
Yiming Zhao
Samson Zhou
Michele Zito