

Minutes for 38th ISSMGE TC304 Meeting (Online Zoom meeting)

Date: Feb 24 2021 (Wed)

Time: 10:00 pm (Taipei, UTC/GMT +8 hours)

Attendees: Andy Leung, Patrick Arnold, Richard Bathurst, Michele Calvello, Zijun Cao, Zhihai Chen, Jianye Ching, Marcin Chwala, Yifei Cui, Diego Di Curzio, Qinxuan Deng, Gordon Fenton, Kevin Foye, Wenping Gong, Xin Gu, Liang Han, Mikhail Kholmyansky, Hyun-Ki Kim, Hong Li, Zhongqiang Liu, Dasaka S. Murty, Farrokh Nadim, Shadi Najjar, Shin-ichi Nishimura, Ali Noorzad, Lars Olsson, Yutao Pan, Iason Papaioannou, Wojciech Puła, Takayuki Shuku, Lucia Simeoni, Johan Spross, Armin Stuedlein, Marco Uzielli, Giovanna Vessia, Hui Wang, Lei Wang, Yu Wang, Stephen Wu, Ikumasa Yoshida, Ioannis Zevgolis, Jie Zhang, Limin Zhang, Wengang Zhang, Yanguo Zhou

1. Approval of the 37th TC304 minutes (online Zoom meeting)

Minutes are approved.

2. Spotlight lectures

- A case study of solving inverse problem with deep generative models (Prof. Stephen Wu, the Institute of Statistical Mathematics, Tokyo, Japan)
- Revisiting the generic multivariate distribution model for probabilistic prediction of soil properties (Dr. Iason Papaioannou, Technische Universität München, Germany)

3. Activities in the past six months (conferences, short courses, awards, keynotes, and special issue)

- Are We Overdesigning? – A Survey of International Practice (A joint initiative by the CAPG, the YMPG, TC205 - Safety and Serviceability and TC304 - Risk)
 - Pile Group (Takayuki Shuku & Waldemar Hachich)
 - Retaining Wall Group (Takayuki Shuku, Zijun Cao, Timo Schweckendiek, Marco Redaelli & Guo-Hui Gao)
 - Footing group (Zhiyong Yang, Jianfeng Xue & Jianye Ching)
 - Slope group (Shui-Hua Jiang, Xian Liu & Jianye Ching)
 - Final report:
<http://140.112.12.21/issmge/2020/TC304%20Report%20on%20overdesign%20survey%20problems.pdf>
- Keynotes, invited speeches, and panelists
 - BK Low delivered 13 technical talks related to his paper which won the 2019 ASCE Thomas A. Middlebrooks award, at the following cities, all coordinated by ASCE except the three Oct 2019 talks in China:
 - Kuala Lumpur (on 8/8/2019),
 - Sydney (2/10), Melbourne (4/10),
 - Christchurch (7/10), Wellington (8/10), Auckland (10/10),
 - Nanjing China (18/10), Fuzhou China (22/10), Shanghai China (25/10),
 - Bangkok (31/10),
 - Taipei (17/12/2019),
 - Lafayette (3/3/2020),
 - Palo Alto (5/3/2020)

- Special Collection of the ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems: Part A on “Bayesian Learning Methods for Geotechnical Data” (Kelvin Yuen, Jianye Ching & Kok-Kwang Phoon)
 - Seven contributions
 - https://ascelibrary.org/ajrua6/bayesian_methods_geotechnical
- Georisk was indexed in SCI
- 7th International Symposium on Reliability Engineering and Risk Management (ISRERM 2020), Nov 12-14 2020, Beijing, China
 - <http://www.isrerm2020.com>
 - Sessions organized by TC304 members
 - 07. Data Analytics for Geotechnical Engineering (Jie Zhang, Wei Guo) (10 presentations)
 - 08. Real World Uncertainty Quantification and Data-driven Decision Making (Kok-Kwang Phoon, Zhaohui Chen, Pengfei Wei) (19 presentations)
 - 13. Advances in Reliability-based Design: Theory and Applications (Zi-Jun Cao, Jian Ji, Wen-Ping Gong) (8 presentations)
- 7th Asian-Pacific Symposium on Structural Reliability and its Applications (APSSRA2020), Oct 4-7 2020, Tokyo, Japan (Ikumasa Yoshida & Shin-chi Nishimura)
 - <http://risk.arch.t.u-tokyo.ac.jp/APSSRA2020/index.html>
 - 5th TC304 Suzanne Lacasse Lecture
 - Risk informed landslide hazard mitigation in mountain highway design (Limin Zhang)
 - Sessions related to TC304
 - Machine Learning for Civil Engineering (M. Kohiyama, S. Wu, WenGang Zhang, Takayuki Shuku) (17 presentations)
 - Current Trend on Statistical Methods for Engineering Analyses (M. Beer, B.U. Park, K.K. Phoon, K. Zuev, M. Faes) (4 presentations)
 - Risk Analysis and Management of Geotechnical Problem (Shin-ichi Nishimura, Lulu Zhang) (4 presentations)
 - Probabilistic Site Characterization: Planning, Data Analytics and Value of Information (Yu Wang, Hui Wang, Shin-ichi Nishimura) (3 presentations)
 - Probabilistic Methods and Reliability-based Design in Geotechnical Engineering (Jinhui Li, Zijun Cao, Yu Otake) (6 presentations)
 - TC304/TC309 Student Contest (Andy Leung, Zijun Cao, Lei Wang & Takayuki Shuku)
 - First place Award: Daniel R.D. Loh, National Univ. of Singapore
 - Encouragement Award: Huaming Tian, Wuhan University
 - Keynote speech on “Learning about a site using sparse site-specific data - recent advancements” (J Ching and KK Phoon)

4. Future Activities

3.1 Conferences & workshops

- 18th International Probabilistic Workshop (IPW 2020), May 12-14 2021, University of Minho, Guimaraes, Portugal
 - <https://ipw2020.com/>

- Session related to TC304: Reliability in Geotechnical Engineering (Timo Schweckendiek & Bram van den Eijnden) (~7 presentations)
- The 6th National Symposium on Engineering Risk & Insurance Research (NSERIR6), postponed to 2021 (exact date to be announced), Chongqing University, Chongqing, China (Chairs: Hongwei Huang & Haijia Wen)
 - TC304/TC309 Student Contest (Wenping Gong, Andy Leung, Zijun Cao, Lei Wang & Hai-Qing Yang)
 - 20 participation groups
 - Submission of full length paper: One month before the conference
 - Contact: Prof. Hai-Qing Yang (yanghaiqing06@163.com)
- Machine Learning & Risk Assessment in GeoEngineering (MLRA 2021) - Joint International Symposium of Two Events: 3rd International Symposium on Machine Learning and Big Data in Geosciences (3ISMLG) & TC304 Workshop on Risk Assessment in Geoengineering (TCWW 2021)
 - <http://www.mlra2021.pwr.edu.pl>
 - Conference Chairs: Wojciech Pula, Isam Shahrour & Giovanna Vessia
 - Location: Wroclaw University of Science and Technology, Wroclaw, Poland
 - Date (tentative): 25 – 27 October 2021
 - Important dates (tentative):
 - Call for abstracts (2 pages abstract) 15 April 2021
 - Abstract acceptance 15 May 2021
 - Deadline for papers (4-5 pages) 30 June 2021
 - Revised paper acceptance 15 September 2021
 - Proceedings Electronic Version October 2021
 - Host conference 24-27 October 2021
 - Special session between TC304/TC309 & ELGIP (European Large Geotechnical Institutes Platform)
 - Proceedings: in electronic version (index in SCOPUS, WoS)
 - PhD Summer School
 - Student Contest
- 13th International Conference on Structural Safety & Reliability (ICOSSAR 2021), Jun 22-24 2022, Tongji University, Shanghai, China
 - <http://www.icossar2021.org/>
 - Important dates
 - Full paper due: Oct 31 2021
 - TC304 Sessions
 - Bayesian analysis of structural and geotechnical models (Iason Papaioannou, Costas Papadimitriou, Daniel Straub, Jie Zhang) (1 paper submitted)
 - Hazard and risk assessment of earthquake-induced landslides (Cong Xu & Qing Lü) (1 paper submitted)
 - Machine learning and data analytics in geotechnical site investigation (Yu Wang & Hui Wang) (5 papers submitted)
 - Multi-source and multi-methodological data fusion to improve the reliability of geo-engineering and environmental characterization, urban planning, and geotechnical designing (Di Curzio Diego, Castrignanò Annamaria, Pula Wojciech & Vessia Giovanna) (0 paper submitted)

- Uncertainty characterization of the geological model and its influences (Wenping Gong & Lei Wang) (1 paper submitted)
- 20th International Conference on Soil Mechanics and Geotechnical Engineering (ICSMGE 2022), May 1-5 2022, Sydney, Australia
 - <https://icsmge2021.org/>
 - Important date
 - Full paper due: June 1 2021
 - TC304/TC309 joint workshop on “From geotechnical databases to data analytics: challenges and perspectives” (J Ching & Zhongqiang Liu)
- 4th International Conference on Information Technology in Geo-engineering (4ICITG), July 2022, Singapore
 - Important dates
 - Abstract for Conference / Special Journal Issues 15 Dec 2020
 - Confirmation of Acceptance of Abstract 15 Feb 2021
 - TC304 Session
 - Data analytics in geotechnical and geological engineering (Y Wang, WG Zhang, XH Qi & J Ching)
- ISGSR2022, Dec 14-16 2022, University of Newcastle, Newcastle, Australia (Jinsong Huang)
 - Dec 14 2022: Short course & registration
 - Dec 15-16 2022: conference
- 8th International Symposium on Reliability Engineering and Risk Management (ISRERM), Sep 4 - 7 2022, Leibniz University Hannover, Hannover, Germany (Michael Beer, Enrico Zio, Kok Kwang Phoon & Bilal M. Ayyub)
 - Important dates
 - Mini Symposium Proposal: April 30, 2021
 - Notification of Acceptance: May 15, 2021
 - Abstract Submission: August 31, 2021
 - Notification of Acceptance: September 30, 2021
 - Full Paper Submission: December 31, 2021
 - TC304 Geotechnical related session (Timo Schweckendiek)

3.2 Special issues

- TC304 Special issue in International Journal of Geoengineering Case histories (Andy Leung)
 - Examples of published papers: <https://www.geocasehistoriesjournal.org/pub>
 - Requires submission of the data from authors (in the form of an excel datasheet) which will be made available online to accompany the paper. The purpose is to facilitate the use of data and enhance impact of the paper.
 - 10 papers have been submitted
 - R. Bathurst and T. Allen (Canada)
 - A. Stuedlein et al. (US)
 - R. Justiniano and A. Pinto (Portugal)
 - L. Tang et al. (China)
 - T. Shuku and J. Ching (Japan)
 - T. Shibata et al. (Japan)
 - A. Cherian (UAE)
 - S. Huang et al. (Australia)
 - D. Di Curzio and G. Vessia (Italy)
 - O. Fraser and W. Theunissen (Australia)

- Timeline
 - Jan 1 – Jan 31 2021 Decision stage. Final decision ready by Jan 31
 - Feb or Mar 2021 Final editing/formatting
- Special issue on “Data analytics in geotechnical and geological engineering” in Georisk (Y Wang, WG Zhang, XH Qi & J Ching)
 - This special issue is related to the 4ICITG TC304 Special Session. All the papers in this special issues need to be presented at this special session. The special issue will cover, but not limited to the following topics:
 - Back analysis of geotechnical structures
 - Big data and database processing
 - Data-driven site investigation and interpolation methods
 - Geostatistics and probabilistic site characterization
 - Quantification of geological uncertainties
 - Reliability-based design considering statistical uncertainty
 - Digital geology and geological modeling
 - Important dates for the Georisk special issue:
 - Submission to Georisk: 15 Feb 2021
 - Tentative acceptance: 30 June 2021
 - 4ICITG Conference: 24-26 Nov 2021
- Special issue on "Quantitative georisk management accounting for climate change" in Geosciences (an open access journal of MDPI) (Marco Uzielli)
 - The call for papers can be found here
https://www.mdpi.com/journal/geosciences/special_issues/georisk_management
 - The manuscript submission deadline is March 20, 2021.
 - If you are keen to submit a paper, please contact Marco (muz@georisk.eu).

3.3 Short courses

- DV Griffiths will deliver short courses at the following cities
 - Pittsburgh, PA, USA, for the Pittsburgh G-I Chapter, April 2020 (postponed due to Covid-19)
 - Christchurch, Wellington and Auckland, for the New Zealand Geotechnical Society (NZGS), May/June 2020
 - Perth, Australia, for the Western Australia Chapter of the Australian Geomechanics Society (AGS), August 2020
 - Durham and Glasgow, UK, for the British Geotechnical Association (BGA), October 2020

3.4 Textbook & monographs

- Textbook “Geotechnical Reliability Analysis: theories, methods, and algorithms” by Jie Zhang et al., to appear in 2021
- Monograph “Model Uncertainties in Foundation Design” by Tang Chong and KK Phoon, CRC Press, published in 2021 (20% discount code available on request)
- Monograph “Big Data in Geotechnics” by KK Phoon, Chong Tang & J Ching, in preparation

5. Honors & Awards

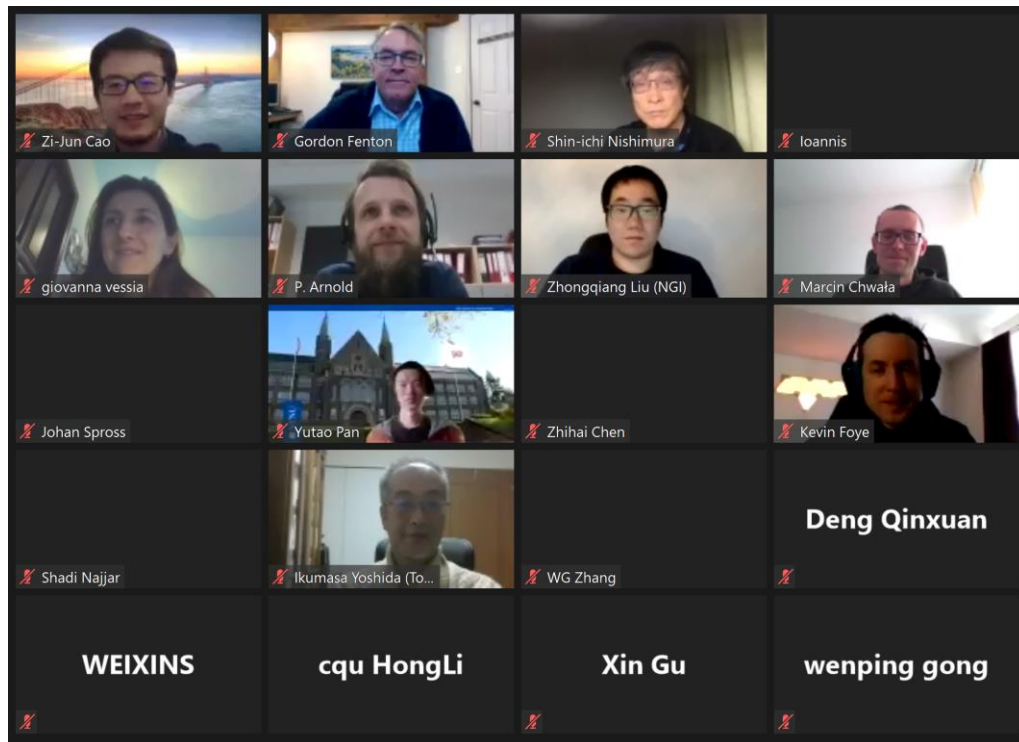
- DV Griffiths has been elected as a Distinguished Member of the ASCE (Dist.M. ASCE) and will be inducted at the ASCE National Convention in Anaheim, CA in October 2020
- The ASCE Geo-Institute has invited Prof. Greg Baecher to be the 2021 Terzaghi Lecturer. This is the highest distinction in ASCE GI.





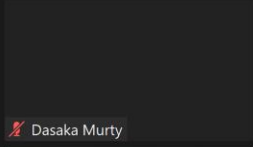





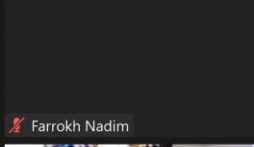





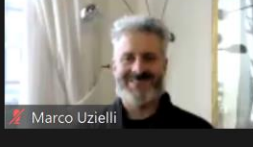



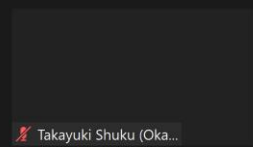
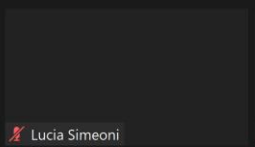
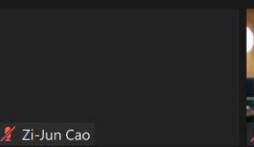



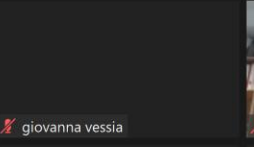


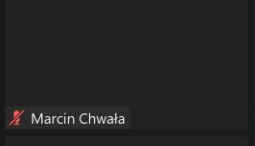
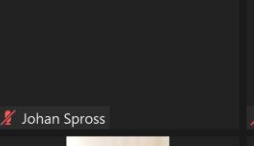
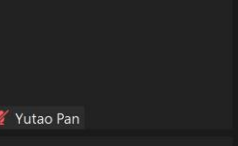

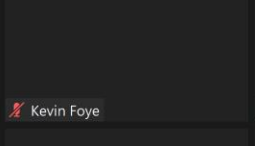

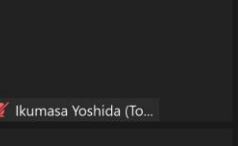
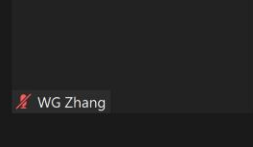
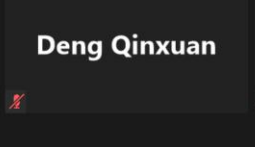

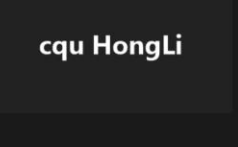
6. Other businesses

- Task groups for Reliability Background Document of the Eurocodes
 - To support Timo Schweckendiek in writing “Document on the Reliability Background of the Eurocodes”
 - Seven task groups (all reports are ready)
 - TG1: Site-specific statistics for geotechnical properties
 - Zheng Guan, Yu-Chi Chang, Yu Wang (lead), Adeyemi Aladejare, Dongming Zhang & Jianye Ching
 - TG2: Site-specific correlations between geotechnical properties
 - Yelu Zhou, Dongming Zhang (lead) & Jianye Ching
 - TG3: Summary of random field model parameters of geotechnical properties
 - Armin Stuedlein (lead), Brigid Cami, Diego Di Curzio, Sina Javankhoshdel, Shin-ichi Nishumura, Wojciech Pula, Giovanna Vessia, Yu Wang & Jianye Ching
 - TG4: Statistics for geotechnical design model factors
 - Chong Tang (lead) & Richard Bathurst
 - TG5: Statistics for transformation uncertainties
 - Jianye Ching (lead) & Ali Noorzad
 - TG6: Determining characteristic values of geotechnical parameters and resistance: an overview
 - Zi-Jun Cao (lead), Jianye Ching, Guo-Hui Gao, Mikhail Kholmyansky, Ali Noorzad, Timo Schweckendiek, Johan Spross, Mohammad Tabarroki, Xiaohui Tan, Yu Wang, Tengyuan Zhao & Yan-Guo Zhou
 - TG7: Numerical evidences for worst-case scale of fluctuation
 - Giovanna Vessia (lead), Yan-Guo Zhou, Andy Leung, Wojciech Pula, Diego Di Curzio, Mohammad Tabarroki & Jianye Ching
- TC304 Young Group (Andy Leung, Zijun Cao & Lei Wang)
 - Short videos
 - Young Group has set seven topics for short videos (about 15 min each) introducing different aspects of geotechnical risk and reliability. Target audience would be practicing engineers and students.
 - Planned short videos (15 min) in progress/planning to be online in June
 - SV1: Overview and significance of geotechnical uncertainty (Waldemar Hachich)
 - SV2: How to characterize site/model uncertainty (Zijun Cao)
 - <http://virtualuniversity.issmge.org/courses/course-v1:ISSMGE+TC304-103+2020/course>
 - SV3: How to estimate characteristic values for design (Yu Wang)
 - <http://virtualuniversity.issmge.org/courses/course-v1:ISSMGE+TC304-101+2019/about>
 - Examples by Zijun (in preparation)
 - SV4: How does geotechnical uncertainty impact the system response (TBA)
 - SV5: How to perform reliability analyses on a spreadsheet (Lei Wang)
 - SV6: Insights from geotechnical reliability-based design (BK Low)
 - <http://virtualuniversity.issmge.org/courses/course-v1:ISSMGE+TC304-102+2020/about>

- SV7: Case studies for reliability-based design and risk assessment (TBA)
 - Marco Uzielli produced a 90-min ISSMGE webinar in 2017 on “Risk and Geotechnical Engineering”: <https://www.issmge.org/education/recorded-webinars/risk-and-geotechnical-engineering>
- TC304 contributions to ISSMGE Virtual University
 - 15-min short videos contributed by Iason Papaioannou, Wengang Zhang & Stephen Wu.
- 304dB database (<http://140.112.12.21/issmge/tc304.htm?=6>)
 - Expansion of 304dB
 - Upcoming databases: load tests (Tang Chong & KK Phoon) & municipal clay data (Dongming Zhang & Hongwei Huang)
- Review of ASTM standards on Geostatistics (Armin)
 - OVERVIEW: Gerald Verbeek, Chair of ASTM Committee D18.01, Committee for Surface and Subsurface Characterization has engaged TC304 to assist with the review of standards related to geostatistics
 - The four standards (available on request) to be reviewed include:
 - D5924 – 18: Selection of Simulation Approaches in Geostatistical Site Investigations
 - D5549 – 19: Contents of Geostatistical Site Investigation Report
 - D5922 – 18: Analysis, Interpretation, and Modeling of Spatial Variation in Geostatistical Site Investigations
 - D5923 – 18: Selection of Kriging Methods in Geostatistical Site Investigations
 - The review period is planned to take about 12 months (this is somewhat flexible), and then delivered to D18.01 for discussion and consensus building prior to formal voting for updating and extension in the ASTM Standards
 - TC304 Members who are interested in contributing to the review of these standards should express interest to Armin at armin.stuedlein@oregonstate.edu
 - Planned approach
 - Recruit three TC304 members to form team for each of four standards:
 - Team members individually perform review and revision
 - Meet upon completion to discuss, combine, and propose consensus revisions to Armin
 - Armin to review consensus document, provide suggestions and feedback
 - Team incorporates revisions as necessary to draft finalize revised Standard
 - Armin to send to Gerald Verbeek as draft final product
 - Members can serve on more than one review team
 - Review Goals
 - Perform review of standard to identify gaps in and out-of-date methodology and procedures, propose new text in concise “standard” language format
 - Identify out-of-date references and propose new references to support revisions to standards
- TC250/SC7/TG-C3 Reliability-based methods (Timo)

- guideline document for reliability-based verification of limit states in geotechnical design and assessment
 - to be published as JRC Technical Report (EU Joint Research Centre)
 - task group with 25 members from 14 European countries (TG leader: Timo Schweckendiek)
 - planning milestone: draft report ready by September 2022
 - Timo Schweckendiek has asked TC304 for assistance; Jianye Ching will be invited to the TG-meetings
- TC304 contribution to the Time Capsule Project initiated by ISSMGE CAPG (Marcin Chwala, Yifei Cui & Jianye Ching)
 - <https://www.issmge.org/the-society/time-capsule/time-capsule>
 - Technical Committees are asked to succinctly document the development of their area, most conveniently by decades, focusing on major breakthroughs and why that came about, with collateral material (papers etc.) that support their story.
 - Deadline: May 2021
 - Members are encouraged to participate (please contact jyching@gmail.com)
- TC304 Forum on Georisk Assessment and Management
 - Objective: To provide a flexible platform for exchanging research findings. The forum is suggested to be held online to minimize the requirement on logistics.
 - Organization: Each forum consists of 5-8 speakers focusing on a clear and specific topic.
 - Organizers: TC304 members are welcome to organize the TC304 Forum
 - Certificates will be provided to the chairs and speakers.
 - 1st TC304 Forum on Georisk Assessment and Management: liquefaction potential assessment, to be held in April 2021 (Jie Zhang & Yan-Guo Zhou)
 - Members are encouraged to organize next forums (please contact jyching@gmail.com)



 Limin Zhang	 Jie Zhang	 Jianye Ching	 Mikhail Kholmyansky
 Dasaka Murty	 Prof. Ali Noorzad	 Lars Olsson	 Armin Stuedlein
 Yan-Guo Zhou	 Stephen Wu	 Farrokh Nadim	 andyleung
 Diego Di Curzio	 Jack (Hui) Wang	 Michele Calvello	 WANG Yu
 Marco Uzielli	 Yifei CUI	 Iason Papaioannou	 Lei Wang - UDC
 Takayuki Shuku (Oka...)	 Lucia Simeoni	 Zi-Jun Cao	 Gordon Fenton
 Shin-ichi Nishimura	 Ioannis	 giovanna vessia	 P. Arnold
 Zhongqiang Liu (NGI)	 Marcin Chwala	 Johan Spross	 Yutao Pan
 Zhihai Chen	 Kevin Foye	 Shadi Najjar	 Ikumasa Yoshida (To...)
 WG Zhang	 Deng Qinxuan	 WEIXINS	 cqu HongLi

