

European-African Conference on Wind Engineering 2017

4-7 July 2017

Conference Programme

Tuesday, July 4 (Day 1) – Keynote Lecture – 9:40-10:40

Prof. Christopher Letchford

Rensselaer Polytechnic Institute (USA)

"My Liege: Wind serving Engineering"

Moderator: Christopher Baker, University of Birmingham, UK

[1] Tuesday, July 4 (Day 1) – 11:10-12:30

Room 1: Bluff body aerodynamics - Square sections

(Chair: Claudio Mannini, University of Florence, Italy)

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| 11:10-11:30 | <u>#166</u> - <i>Experimental wind tunnel tests and numerical analysis of the aerodynamic behaviour of a high tapered obelisk</i>
Luca Amerio, Tommaso Argentini, Luca Bernini, Federico Perotti, Alberto Zasso |
| 11:30-11:50 | <u>#233</u> - <i>Unsteady pressure distributions on a 4:1 rectangular cylinder: comparison of numerical and experimental results using decomposition methods</i>
Amandine Guissart, Thomas Andrianne, G. Dimitriadis, V.E. Terrapon |
| 11:50-12:10 | <u>#129</u> - <i>Computational studies of vortex-induced vibration of a bending 5:1 rectangular cylinder</i>
Dinh Tung Nguyen, David Hargreaves, John Owen |
| 12:10-12:30 | <u>#157</u> - <i>Characterization of the shear layer instability on the 2D square prism</i>
Daniel Moore, Daniel Lander, Chris Letchford, Michael Amitay |

Room 2: Wind energy

(Chair: Olivier Flamand, CSTB, France)

- 11:10-11:30 *#27 - Towards accurate performance prediction of a vertical axis wind turbine operating at different tip speed ratios*
 Abdolrahim Rezaeiha, Ivo Kalkman, Bert Blocken
- 11:30-11:50 *#59 - On the influence of the shape of buildings in urban wind energy harvesting*
 Giulio Vita, Hassan Hemida, Charalampos Baniotopoulos
- 11:50-12:10 *#243 - Wind flow potential above noise barriers for urban wind turbine applications near highways*
 Nikolaos Chrysochoidis-Antsos, Ad van Wijk ★ PHD AWARD CANDIDATE ★
- 12:10-12:30 *#242 - A new wind turbine full of innovative features dedicated to the African wind energy market*
 Jacques Mambour, Patrick Hendrick, Michaël Nahant

Room 3: Wind codes and Equivalent static loads

(Chair: Hrvoje Kozmar, University of Zagreb, Croatia)

- 11:10-11:30 *#220 - Method of determining characteristic values of average and maximum wind pressure from the Carpathians zoning transcarpathian region*
 Roman Kinasz, Yaroslav Huk
- 11:30-11:50 *#156 - A 100 years of along-wind loading provisions for chimneys*
 Jerzy Antoni Zurański, Mariusz Gaczek
- 11:50-12:10 *#183 - The New Hong Kong wind code*
 Andrew Allsop
- 12:10-12:30 *#250 - Adjustment of regulatory documents of the Russian Federation in the field of wind loads on building structures on the basis of learning and adaptation of the Eurocodes requirements*
 Olga Poddaeva, Pavel Churin, Anastasia Fedosova, Oleg Egorychev



LUNCH BREAK



[2] Tuesday, July 4 (Day 1) – 14:00-15:40

Room 1: Natural ventilation

(Chair: Shuyang Cao, Tongji University, China)

- 14:00-14:20 #71 - *Natural ventilation energy saving potential by CFD*
Theodore Stathopoulos, Leon (Liangzhu) Wang, Jun Cheng
- 14:20-14:40 #122 - *Numerical analysis of forced convective heat transfer coefficients at the facades of a low-rise building: influence of wind direction*
Samy Iousef, Hamid Montazeri, Bert Blocken, Pieter van Wesemael
- 14:40-15:00 #227 - *Large eddy simulation of a cross-ventilated building: validation and impact of inflow generators*
Raffaele Vasaturo, Ivo Kalkman, Bert Blocken, Pieter van Wesemael ★
PHD AWARD CANDIDATE ★
- 15:00-15:20 #139 - *Wind tunnel experiments of cross-ventilative cooling in a generic isolated building with heated wall*
Katarina Kosutova, Christina Vanderwel, Twan van Hooff, Bert Blocken, Jan Hensen

Room 2: Wind energy - Harvesting

(Chair: Xavier Amondolèse, Ecole Polytechnique, France)

- 14:00-14:20 #167 - *Turbulence effects on the post-critical response of flutter-based generators*
Luca Pigolotti, Claudio Mannini, Gianni Bartoli
- 14:20-14:40 #169 - *Aerodynamic modification on slender structures for enhancing wind energy harvesting*
Gang Hu, K.T. Tse, K.C.S. Kwok
- 14:40-15:00 #17 - *A comparative wind tunnel study of energy harvesting from galloping and wake galloping of square prisms*
Pascal Hémon
- 15:00-15:20 #73 - *Aerodynamic design of a wind turbine diffuser with openfoam*
Félix Sorribes-Palmer, Angel Sanz-Andres, Sebastián Franchini, Mikel Ogueta

Room 3: Wind codes and Equivalent static loads

(Chair: Benoit Parmentier, CSTC, Belgium)

- 14:00-14:20 #82 - *Wind tunnel measurements and comparisons with coding for a coke warehouse*
Mikel Ogueta-Gutiérrez, David González-Montecino, Félix Sorribes-Palmer, Sebastián Franchini, Ana Malo
- 14:20-14:40 #204 - *Recent advancement in the extraction of Equivalent Static Wind Loads*
Luca Patruno, Mattia Ricci, Stefano de Miranda
- 14:40-15:00 #67 - *A non-Gaussian probabilistic approach for estimating the equivalent static wind load on structures from unsteady pressure measurements in wind tunnel*
Wafaa Kassir, Christian Soize, Jean Vivien Heck, Fabrice De Oliveira
- 15:00-15:20 #239 - *Extensive wind tunnel measurements to explore the conditional expected load method*
Nicolas Blaise, Thomas Andrianne, Vincent Denoël

Room 4: Cables and transmission lines

(Chair: Ashraf El Damatty, University of Western Ontario, Canada)

- 14:00-14:20 #42 - *Role of low-frequency vortices on dry galloping of inclined stay cable*
Hiroshi Katsuchi, Hung Vo Duy, Hitoshi Yamada
- 14:20-14:40 #165 - *Experimental study on multi-mode rain-wind induced vibrations of a flexible cable*
Dong-Lai Gao, Wen-Li Chen, Hui Li
- 14:40-15:00 #103 - *Indoor tests for the aeolian vibration of transmission lines*
Tian Peng, Qiang Xie, Jian Zhang
- 15:00-15:20 #178 - *Galloping instability of a stay cable attached with a viscous damper*
Cung Nguyen, John Macdonald
- 15:20-15:40 #255 - *Similarity criteria for the sectional model of three conductors bundle of power lines at their aeroelastic vibrations*
Andrzej Flaga

COFFEE BREAK

[3] Tuesday, July 4 (Day 1) – 16:10-17:50

Room 1: Extreme values

(Chair: Luca Patruno, University of Bologna, Italy)

- 16:10-16:30 #229 - *Problems and challenges when estimating extreme wind speeds*
Arvid Naess
- 16:30-16:50 #79 - *A method for estimating extreme wind pressure on independent blocks with short-term time history samples*
Qingshan Yang, Danyu Li
- 16:50-17:10 #251 - *Methods of increasing the accuracy of the simulation of wind effects based on preliminary statistical analysis of the frequency of occurrence of different wind forces in the directions*
Olga Poddaeva, Pavel Churin, Anastasia Fedosova, Oleg Egorychev
- 17:10-17:30 #202 - *Peak response of HAWTs to wind and seismic actions*
Alberto Maria Avossa, Cristoforo Demartino, Francesco Ricciardelli

Room 2: Pollutant dispersion - Street canyon flows

(Chair: Eric Savory, University of Western Ontario, Canada)

- 16:10-16:30 #184 - *CFD simulations of near-field pollutant dispersion with different plume buoyancies*
Yoshihide Tominaga, Ted Stathopoulos
- 16:30-16:50 #56 - *Dispersion within and above an array pf blocks in a spatially developing boundary layer*
Vincenzo Sessa, Xie Zheng-Tong ★ PHD AWARD CANDIDATE ★
- 16:50-17:10 #195 - *The effect of the span-wise width of diffusion in the wind tunnel measurement for evaluating the effective stack height*
Hiroki Ono, Koichi Sada
- 17:10-17:30 #248 - *A street canyon vertical mass-exchange model including the influence of upstream flow regime and canyon geometry*
Eric Savory, Laurent Perret, Karin Blackman, Royston Fernandes
- 17:30-17:50 #228 - *Evaluation of computational domain on CFD simulation of flow in a long street canyon under a perpendicular wind direction*
Zhengtao Ai, Cheuk Ming Mak

Room 3: Probabilistic approaches

(Chair: Luca Caracoglia, Northeastern University, USA)

- 16:10-16:30 #113 - *Wind-driven reliability analysis of temporary structures using full-probabilistic method*
 Timothée Lonfils, Benoit Parmentier
- 16:30-16:50 #244 - *Preliminary investigation to assess the application of ductility-based design approach for high rise buildings under extreme wind loads*
 Fouad Elezaby, Ashraf El Damatty
- 16:50-17:10 #237 - *Wind-induced damage loss estimation in tall buildings accounting for directionality effects*
 Laura Ierimonti, Luca Caracoglia, Ilaria Venanzi
- 17:10-17:30 #88 - *Investigation on damage and intervention costs induced by thunderstorm-like winds on tall buildings*
 Luca Caracoglia
- 17:30-17:50 #8 - *Probabilistic optimization of a suspension bridge deck considering correlation among wind related random variables*
 Ibuki Kusano, Aitor Baldomir, José Angel Jurado, Santiago Hernandez

Room 4: Cables and transmission lines

(Chair: Luigi Carassale, University of Genova, Italy)

- 16:10-16:30 #218 - *A corotational finite element formulation to model galloping vibrations of iced conductors*
 Francesco Foti, Luca Martinelli
- 16:30-16:50 #197 - *3DOF galloping analysis based on quasi-steady theory with reference to the aerodynamic stiffness*
 John Macdonald, Mingzhe He
- 16:50-17:10 #253 - *Wind tunnel tests of aerodynamic and aeroelastic interference phenomena of overhead electrical conductors bundle for different cases of their ice / frost / snow covers*
 Andrzej Flaga, Lukasz Flaga, Piotr Krajewski
- 17:10-17:50 #246 - *Analysis of transmission line structures under moving downburst*
 Ahmed Shehata, Ashraf El Damatty

Welcome reception 18:00-19:30

Cocktail in the Entrance Hall of the Conference Center

Wednesday, July 5 (Day 2) – Keynote Lecture – 8:30-9:30

Arch. Paul Vincent

Paul Vincent Architecture (France)

"In search of common sense. A virtuous duality between natural ventilation and working practices"

Moderator: Olivier Flamand, CSTB, France

[4] Wednesday, July 5 (Day 2) – 09:40-10:40

Room 2: Computational Wind Engineering - atmospheric flows

(Chair: Rüdiger Höffer, Ruhr-Universitaet Bochum, Germany)

- 09:40-10:00 #54 - *Precursor simulation for LES validation study of the Michelstadt case*
 Jörg Franke, Thanh Ha Pham
- 10:00-10:20 #66 - *Inflow uncertainty definition for atmospheric flows in rural and urban environments*
 Clara García-Sánchez, Catherine Gorlé
- 10:20-10:40 #118 - *Sensitivity test of different inflow conditions for CFD simulations of wind flow in urban areas*
 Alessio Ricci, Massimiliano Burlando, Andrea Freda, Maria Pia Repetto, Ivo Kalkman, Bert Blocken ★ PHD AWARD CANDIDATE ★

Room 3: Vegetation and bio-inspired aerodynamics

(Chair: Emmanuel de Langre, Ecole Polytechnique, France)

- 09:40-10:00 #106 - *Wind-induced foliage dynamics*
 Loïc Tadrist, Marc Saudreau, Pascal Hémon, Xavier Amandolèse, André Marquier, Tristan Leclercq, Emmanuel de Langre
- 10:00-10:20 #51 - *On the fluid dynamics of circular cylinders with span-wise waviness*
 Kai Zhang, Hiroshi Katsuchi, Hitoshi Yamada, Dai Zhou
- 10:20-10:40 #6 - *Reducing losses due to crop lodging*
 Christopher Baker, Mark Sterling

Room 4: Damping and vibration mitigation

(Chair: Kazutoshi Matsuda, Kyushu Institute of Technology, Japan)

- 09:40-10:00 #187 - *Evaluation of damping and natural period of tall RC buildings using full-scale data*
Hongjin Kim, Seung-Hoon Shin, Kyung-Jae Shin, Whajung Kim
- 10:00-10:20 #23 - *A force action based interpretation of damping*
Robert McNamara
- 10:20-10:40 #259 - *Method for preliminary design of a viscous damper system, applied to a tall building*
Philippe Duflot, Giovanni Vigano, Vincent Denoël

COFFEE BREAK



[5] Wednesday, July 5 (Day 2) – 11:10-12:30

Room 1: Bluff body aerodynamics - Interferences

(Chair: Mingshui Li, Beijing Jiaotong University, China)

11:10-11:30	<u>#74</u> - <i>In-line oscillation characteristics of two square cylinders in a tandem arrangement</i> Kazutoshi Matsuda, Kusuo Kato, Kentaro Suda, Yuta Nakamura
11:30-11:50	<u>#141</u> - <i>Experimental and numerical aerodynamic optimization of a post-tensioned concrete railway bridge in tandem arrangement with a truss road bridge</i> Luca Amerio, Tommaso Argentini, Daniele Rocchi, Alberto Zasso
11:50-12:10	<u>#164</u> - <i>A low Re flow around four side-by-side circular cylinders</i> MD Mahbub Alam, Qinmin Zheng, Kerry Hourigan
12:10-12:30	<u>#19</u> - <i>Dynamic properties of wind-excited linked tall buildings considering both intra- and inter-building structural couplings</i> Jie Song, Shuguo Liang, Gang Hu

Room 2: Wind-driven rain

(Chair: Yoshihide Tominaga, Niigata Institute of Technology, Japan)

11:10-11:30	<u>#215</u> - <i>Application of CFD simulations of Wind-driven rain (WDR) on the new roof extension for San Mames New Football Stadium</i> Javier Llarena, Lourdes Cabezuelo, Armando Bilbao
11:30-11:50	<u>#96</u> - <i>Field measurements of wind-driven rain: verification and expansion of site wind conditions</i> Vincent Chiu, Hua Ge, Ted Stathopoulos
11:50-12:10	<u>#15</u> - <i>Numerical modelling of wind-blown rain on railway station platforms and mitigation through canopy design</i> Dominic Flynn, Hassan Hemida, Chris Baker
12:10-12:30	<u>#77</u> - <i>Calculation of the driving rain wall factor using ray-tracing</i> Stella Tsoka, Thomas K. Thiis

Room 3: Measuring Techniques

(Chair: Daniele Rocchi, Politecnico di Milano, Italy)

- 11:10-11:30 #44 - *Measuring wind with micro planes*
Simon Watkins, Abdulghani Mohamed, Samuel Prudden, Matthew Marino, Reece Clothier, Alex Fisher
- 11:30-11:50 #186 - *On the use of Irwin probes to measure wall shear stress in rectangular ducts of variable section using Openfoam*
Raquel Faria, Almerindo Ferreira, A.M.G. Lopes, Antonio C. M. Sousa
- 11:50-12:10 #192 - *Experimental and numerical appraisal of wind-induced noise*
Sergey Mijorski, Magnus Lysfjord, Stefano Cammelli, Ganesh Krishnan, Richard Jackett

Room 4: Damping and vibration mitigation

(Chair: Hongjin Kim, Kyungpook National University, Republic of Korea)

- 11:10-11:30 #121 - *A novel fully-coupled computational wind-structure interaction approach for the design of added mass dampers*
Mate Pentek, Roland Wuchner, Kai-Uwe Bletzinger ★ PHD AWARD CANDIDATE ★
- 11:30-11:50 #53 - *Amplitude-dependent damping ratio of a cable-suspended roof identified from full-scale data*
Bo Chen, Xiaohong Wang, Qingshan Yang
- 11:50-12:10 #94 - *Dynamic response of an RC high-rise building under wind load, and energy dissipation systems effect*
Aboubaker Gherbi, Mourad Belgasmia
- 12:10-12:30 #203 - *Flutter suppression using a magnetic vibration absorber*
Arnaud Malher, Xavier Amandolèse, Cyril Touzé, Olivier Doaré, Giuseppe Habib, Gaëtan Kerschen

LUNCH BREAK

[6] Wednesday, July 5 (Day 2) – 14:00-15:40

Room 1: Non-stationary winds

(Chair: Giovanni Solari, University of Genova, Italy)

- 14:00-14:20 #142 - *Pressure distribution over a typical low-rise building under laboratory simulated tornado vortices*
Maryam Refan, Ahmed Elatar, Horia Hangan
- 14:20-14:40 #90 - *Effect of steady stationary laboratory simulated downburst flow on a standard tall building*
Chowdhury Jubayer, Horia Hangan
- 14:40-15:00 #35 - *Threats to people and infrastructure in Poland caused by tornadoes based on the past observations*
Tadeusz Chmielewski
- 15:00-15:20 #249 - *A parametric study of downbursts using a full-scale cooling source model*
Eric Savory, Christopher Oreskovic, Leigh Orf
- 15:20-15:40 #86 - *Statistical analysis of extreme wind speed due to thunderstorm outflows*
Shi Zhang, Maria Pia Repetto, Giovanni Solari, Qingshan Yang **★ PHD AWARD CANDIDATE ★**

Room 2: Computational wind engineering - atmospheric flows

(Chair: Hamid Montazeri, Leuven University, Belgium)

- 14:00-14:20 #245 - *Numerical simulation of WINDEEE dome downburst for open terrain using physical roughness elements*
Ibrahim Ibrahim, Ashraf El Damatty, H. Aboshosha
- 14:20-14:40 #78 - *A new urban test campaign for numerical uncertainty quantification*
Jorge Sousa, Catherine Gorlé
- 14:40-15:00 #104 - *Study of RANS simulation of ABL flow over complex terrains - comparison with LIDAR monitoring at Xiao-Ping-Ding*
Yi-Chao Li, Cheng-Hsin Chang, Tsung-Chin Yang
- 15:00-15:20 #111 - *Numerical modeling of urban microclimate in a real compact area in the Mediterranean region: impact of urban morphology*
Olga Palusci, Hamid Montazeri, Bert Blocken, Paolo Monti, Carlo Cere

Room 3: Façades and cladding

(Chair: Alberto Zasso, Politecnico di Milano, Italy)

- 14:00-14:20 #38 - *Controlling of sun protecting systems at outside glass facades by wind characteristic method*
Hans Ruscheweyh, Reiner Windhövel
- 14:20-14:40 #257 - *Forces and pressure distributions on building facades with a screen: experimental twodimensional studies.*
Andrea Giachetti, Claudio Mannini, Gianni Bartoli ★ PHD AWARD CANDIDATE ★
- 14:40-15:00 #47 - *Wind loads on external sun blinds: a case study*
Chris Geurts, Okke Bronkhorst, Carine van Bentum
- 15:00-15:20 #126 - *Experimental investigation on the spatial distribution of wind pressure on building facades. Comparison between time-filtering and area-filtering of wind tunnel data.*
Andrew Allsop, Luca Amerio, Daniele Rocchi, Alberto Zasso
- 15:20-15:40 #115 - *Overall wind loads on large duo-pitch multi-span greenhouses*
Okke Bronkhorst, Carine van Bentum, Chris Geurts, Leo van der Knaap

Room 4: Structural analysis and design

(Chair: Claudio Borri, BBP Engineering, Italy)

- 14:00-14:20 #117 - *Wind force coefficients for H.P.-shaped solid and porous canopy roofs*
Yasushi Uematsu, Yukari Miyamoto, Eri Gavanski
- 14:20-14:40 #230 - *CFD and PIV study of the airflow in and around a saddle-shaped double-roofed stadium*
Rubina Ramponi, Giulia Matteoni, Paul Lynch, Mutlu Ucuncu, Steve Walker
- 14:40-15:00 #234 - *Wind-induced vibrations of torsionally coupled systems with soil-foundation-structure interaction*
Ming-Yi Liu, Sheng-Yin Huang
- 15:00-15:20 #26 - *Experimental investigation on the wind force of a scaffolding system*
Fuh-Min Fang, Shi-Xian Chang, Chen-Yang Chung, Yi-Chao Li, Chern-Hwa Chen

COFFEE BREAK

[7] Wednesday, July 5 (Day 2) – 16:10-17:50

Room 1: Non-stationary winds

(Chair: Eric Savory, University of Western Ontario, Canada)

- 16:10-16:30 #28 - *Analysis of the duration of high winds during hurricanes*
Gregory Kopp, Sihan Li, Hanping Hong
- 16:30-16:50 #235 - *A probabilistic framework for risk assessment of electric power transmission lines subjected to hurricanes*
Abdullahi Salman, Yue Li
- 16:50-17:10 #176 - *Influence of background winds and storm motion on downburst outflow*
Djordje Romanic, Dan Parvu, Horia Hangan
- 17:10-17:30 #247 - *Lessons learned from testing of a transmission line model at the WindEEE dome under simulated downbursts*
Amal Elawady, Ashraf El Damatty ★ PHD AWARD CANDIDATE ★
- 17:30-17:50 #3 - *A paramedic study of the effect of a tornado generator's geometric design on the flow field*
Stefanie Gillmeier, Mark Sterling, Hassan Hemida ★ PHD AWARD CANDIDATE ★

Room 2: Computational Wind Engineering - loads on structures

(Chair: Luca Patruno, University of Bologna, Italy)

- 16:10-16:30 #225 - *Large eddy simulations for wind loads assessment: benchmark on a high-rise building*
Mattia Ricci, Luca Patruno, Ivo Kalkman, Bert Blocken, Stefano de Miranda ★ PHD AWARD CANDIDATE ★
- 16:30-16:50 #72 - *Large-eddy simulations of the atmospheric boundary layer for calculating wind loads on buildings*
Giacomo Lamberti, Clara García-Sánchez, Catherine Gorlé
- 16:50-17:10 #50 - *Comparison of CFD simulations with a benchmark wind tunnel test for wind loads*
Okke Bronkhorst, Carine van Bentum, Chris Geurts, Corina Hulsbosch-Dam
- 17:10-17:30 #174 - *CFD study towards a solution for wind speed gradient reduction by large wind screens near a car carrier port*
Wendy Janssen, Bert Blocken, Herm Jan van Wijhe

17:30-17:50	<u>#125</u> - <i>Vortex induced vibrations on circular structures: Numerical modeling of aerodynamic loads.</i> Ulf Winkelmann, Anina Šarkić Glumac, Francesca Lupi, Ruediger Hoeffe
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Room 3: Photovoltaic and solar arrays

(Chair:)	
16:10-16:30	<u>#58</u> - <i>Peak negative pressure coefficients on low-tilted solar arrays mounted on flat roofs: The effects of building size and model scale</i> Thorsten Kray, Jantje Paul
16:30-16:50	<u>#34</u> - <i>Wind tunnel tests to study the wind loads on and reduce the ballast needed for solar energy systems on flat roofs</i> Marcel van Uffelen
16:50-17:10	<u>#45</u> - <i>Wind loads on solar arrays mounted on flat roofs</i> Jingxue Wang, Qingshan Yang, Yukio Tamura
17:10-17:30	<u>#177</u> - <i>Comparison between wind tunnel and computational predictions of the shear velocity distribution along a flat roof with solar panels</i> Almerindo Ferreira, Thomas Thiis
17:30-17:50	<u>#48</u> - <i>Full scale investigation of wind loads on a light weight building-integrated photovoltaic system</i> Chris Geurts, Okke Bronkhorst, Carine van Bentum

Room 4: Structural analysis and design

(Chair: Jonas Snaebjörnsson, Reykjavik University, Iceland)	
16:10-16:30	<u>#232</u> - <i>Quantification of effect of inclined webs on flutter performance of box girders</i> Qi Wang, Haili Liao, Mingshui Li
16:30-16:50	<u>#119</u> - <i>Experimental verification of a generic buffeting load model for high-rise and long-span structures</i> Robin George Srouji, Kristoffer Hoffmann, Svend Ole Hansen
16:50-17:10	<u>#205</u> - <i>The Third Bosphorus Bridge: the aerodynamic stability of the steel segments during lifting operations</i> Vincent de Ville de Goyet, Yves Duchene, Thomas Andrianne
17:10-17:30	<u>#208</u> - <i>The Third Bosphorus Bridge: its behavior under wind during different erections stages and the final configuration</i> Vincent de Ville de Goyet, Yves Duchene, Arnaud Propson, Christophe Peigneux

17:30-17:50

#95 - *Nonlinear behavior of high-rise steel building under wind effect taking into account soil-structure interaction*
Souhaib Bougherra, Mourad Belgasmia

Gala Diner 19:00-23:00

at the Ferme du Banneway

Bus leaving from the Guillemins station at 19:00

[8] Thursday, July 6 (Day 3) – 08:40-09:40

Room 1: Fluid Structure Interaction - Bridges

(Chair: Pascal Hémon, Ecole Polytechnique, France)

- 08:40-09:00 #83 - *Flutter and galloping of bridge decks with roadway wind barriers*
Andrija Buljac, Hrvoje Kozmar, Stanislav Pospíšil, Michael Macháček
- 09:00-09:20 #92 - *Tacoma Narrows Bridge flutter - Theory, experiment and full-scale observation*
Maja Rønne, Marlene Grundvig Malthe, Allan Larsen **★ PHD AWARD CANDIDATE ★**
- 09:20-09:40 #206 - *The Third Bosphorus Bridge: from a cardboard model to reality by the way of the wind tunnel laboratory*
Vincent de Ville de Goyet, Thomas Andrianne

Room 2: Optimization and advanced tools

(Chair: Casimir Katz, SOFiSTiK AG, Germany)

- 08:40-09:00 #154 - *Application of surrogate models in the characterization of the aerodynamic response of streamlined bridge decks*
Miguel Cid Montoya, Felix Nieto, Ibuki Kusano, Antonio J. Álvarez, Santiago Hernandez, José Ángel Jurado
- 09:00-09:20 #93 - *A multi-fidelity shape optimization via surrogate modeling for civil structures*
Fei Ding, Ahsan Kareem, Seymour Spence
- 09:20-09:40 #13 - *Optimum design of cable stayed bridges with single box deck considering aeroelastic and structural constraints*
Miguel Cid Montoya, Santiago Hernández, Félix Nieto **★ PHD AWARD CANDIDATE ★**

Room 4: Human comfort

(Chair: Hassan Hemida, University of Birmingham, UK)

- 08:40-09:00 #7 - *The safety of pedestrians, cyclists and high sided vehicles in urban areas in windy conditions*
Christopher Baker, Andrew Quinn, Hassan Hemida, Mark Serling, Mike Jesson, Dominic Flynn
- 09:00-09:20 #41 - *The effect of urban geometry of London on pedestrian level wind speeds - A quantitative analysis*
Leonidas Tsichritzis, Marialena Nikolopoulou **★ PHD AWARD CANDIDATE ★**

09:20-09:40

#175 - *The effects of lift-up design of high-rise buildings on the pedestrian-level wind environment*
Xuelin Zhang, Asiri Weerasuriya, K.T. Tse, K.C.S. Kwok, Cheuk Ming Mak, Jianlei Niu

Thursday, July 6 (Day 3) – Keynote Lecture – 8:50-9:50

Prof. Luigi Carassale

Università degli Studi di Genova (Italy)

"*Processing wind pressure data: from art towards an industrial standard*"

Moderator: Ahsan Kareem, University of Notre-Dame, USA

[9] Thursday, July 6 (Day 3) – 11:10-12:30

Room 1: Fluid Structure Interaction

(Chair: Thomas Andrianne, University of Liège, Belgium)

- 11:10-11:30 #231 - *Wind tunnel tests and performance improvement of a conveyor suspension bridge*
Francesco Dorigatti, Christopher Scollard, Guy Larose, Pierre-Olivier Dallaire
- 11:30-11:50 #143 - *Numerical simulation of the torsional stall flutter of a parabolic trough solar collector*
Michael Andre, Roland Wuchner, Kai-Uwe Bletzinger
- 11:50-12:10 #198 - *Unsteady forces on flat-plate and panel due to a sudden variation of the wind direction*
Xavier Amandolèse, Yuelong Yu, Yingzheng Liu
- 12:10-12:30 #128 - *2D URANS simulation of aerodynamic loads on a pitching airfoil: Impact of computational parameters*
Feiyu Geng, Ivo Kalkman, Akke Suiker, Bert Blocken

Room 2: Special structures and methods

(Chair: Chris Geurts, TNO, Netherlands)

- 11:10-11:30 #108 - *Wind tunnel tests and numerical investigation in order to optimize the system of demolition of a nuclear power plant chimney*
Maria Esposito, Maurizio Arena, Leandro Maio, Antonio Dimatteo, Stefano Castelli, Leonardo Lecce
- 11:30-11:50 #209 - *The Louis Vuitton Foundation and its design under turbulent wind*
Vincent de Ville de Goyet, Amaury Leroy
- 11:50-12:10 #87 - *Proper orthogonal decomposition of random pressure fields acting on tall buildings*
Luca Vacca, Stefano Cammelli, Yin Fai Li
- 12:10-12:30 #116 - *A solid-fluid coupling simulation for wind borne debris: auto-rotating flat plate and flying flat plate*
Kazuaki Uchibori, Tetsuro Tamura

Room 3: Full-scale measurements

(Chair: Elsa Caetano, University of Porto, Portugal)

- 11:10-11:30 #65 - *Evaluation of Wind-induced response predictions of a long-span suspension bridge using full-scale measurements*
 Aksel Fenerci, Ole Øiseth ★ PHD AWARD CANDIDATE ★
- 11:30-11:50 #222 - *Identification of a slight vortex induced vibration episode at the Grande Ravine Viaduct*
 Fernando Bastos, Elsa Caetano, Álvaro Cunha, Xavier Cespedes, Olivier Flamand
- 11:50-12:10 #150 - *Measurements of low-frequency wind spectral properties relevant to design of long-span bridges*
 Etienne Cheynet, Jasna Bogunović Jakobsen, Jónas Thór Snaebjörnsson
- 12:10-12:30 #55 - *Quantitative relationship between surface roughness parameters obtained from building information database and wind turbulence near the ground surface*
 Ryoji Sasaki, Yasushi Uematsu

Room 4: Wind and structures: special stochastic analysis

(Chair: Jiri Naprstek, Inst. Theoretical and Applied Mechanics, Czech Republic)

- 11:10-11:30 #226 - *Closed-form prediction of the wind-induced fatigue of structures*
 Maria Pia Repetto, Michela Damele
- 11:30-11:50 #163 - *Coupled aerodynamic and hydrodynamic response of a long span bridge suspended from floating towers*
 Jungao Wang, Jónas Thór Snaebjörnsson, Jasna Bogunović Jakobsen, Etienne Cheynet
- 11:50-12:10 #172 - *Aeroelastic stability of a two-degrees of freedom system with additive and multiplicative narrow band random noises*
 Jiri Naprstek, Stanislav Pospíšil
- 12:10-12:30 #240 - *rotational stability of a stochastic oscillator*
 Hélène Vanvinckenroye, Vincent Denoël



LUNCH BREAK



[10] Thursday, July 6 (Day 3) – 14:00-15:40

Room 1: Fluid Structure Interaction - VIV

(Chair: Francesca Lupi, Ruhr-Universität Bochum, Germany)

- 14:00-14:20 #170 - *Modeling of vortex-induced vibrations of an elongated rectangular cylinder through wake-oscillator models*
Antonino Maria Marra, Claudio Mannini, Gianni Bartoli
- 14:20-14:40 #144 - *Aeroelastic forces in vortex-induced vibrations: critical analysis based on wind tunnel experiments*
Francesca Lupi, Hans-Juergen Niemann, Ruediger Hoeffer
- 14:40-15:00 #214 - *Interference of vortex-induced vibration and galloping of a rectangular cylinder in turbulent flow*
Claudio Mannini, Antonino Maria Marra, Tommaso Massai, Gianni Bartoli

Room 2: Computational Wind Engineering - atmospheric flows

(Chair: Hamid Montazeri, Leuven University, Belgium)

- 14:00-14:20 #110 - *Steady RANS simulation of the homogeneous neutrally stratified atmospheric boundary layer*
Mihael Cindori, Franjo Juretić, Hrvoje Kozmar, Ivo Dzijan
- 14:20-14:40 #80 - *RANS turbulence model form uncertainty quantification for the flow around a wall-mounted cube*
Stéphanie Zeoli, Laurent Bricteux, Catherine Gorlé
- 14:40-15:00 #182 - *Large eddy simulation of pressure fluctuations on a surface-mounted cube*
Romain Guichard
- 15:00-15:20 #210 - *Large-eddy simulations of flow around a high-rise building: Validation and sensitivity analysis on turbulent statistics*
Tsubasa Okaze, Hideki Kikumoto, Hiroki Ono, Masashi Imano, Takanasa Hasama, Takeshi Kishida, Keisuke Nakao, Naoki Ikegaya, Yuichi Tabata, Yoshihide Tominaga

Room 3: Wind tunnel testing

(Chair: Thorsten Kray, I.F.I. Institut für Industriaerodynamik GmbH, Germany)

- 14:00-14:20 #24 - *Wind tunnel testing of bridge deck section models with a new forced vibration rig*
Bartosz Siedziako, Ole Øiseth, Anders Rønnquist
- 14:20-14:40 #60 - *Identifying aerodynamic derivatives of a slotted box girder in a forces vibration set up using a harmonic and arbitrary motion*
Henrik Skyvulstad, Bartosz Siedziako, Ole Øiseth
- 14:40-15:00 #112 - *Time domain modelling of self-excited aerodynamic forces for bridge decks. An experimental study*
Ole Øiseth, Bartosz Siedziako, Yuwang Xu
- 15:00-15:20 #238 - *Experimental and numerical studies on suppression of vortex-induced vibrations of twin box girders by central grids*
Qiang Zhou, Junxin Wang, Haili Liao, Hongmiao Jing, Mingshui Li
- 15:20-15:40 #131 - *Study on extraction parameters of flutter derivatives for the development of a time-domain formulation of self-excited forces*
Sébastien Maheux, Sébastien Langlois, Fédéric Légeron *** PHD AWARD CANDIDATE ***

Room 4: Human comfort

(Chair: Bert Blocken, TU Eindhoven , Netherland)

- 14:00-14:20 #147 - *Numerical and wind-tunnel evaluation of ventilation conditions in a real compact heterogeneous urban area*
Nestoras Antoniou, Hamid Montazeri, Hans Wigo, Marina Neophytou, Bert Blocken, Mats Sandberg
- 14:20-14:40 #18 - *The effect of changing the windward wall geometry of traditional wind tower (wind catcher) on aerodynamic behavior and natural ventilation in arid regions*
Nasreddine Sakhri, Abdeljebar Moussaoui, Belkacem Draoui, Aicha Choumane
- 14:40-15:00 #252 - *The effects of green features on natural ventilation in buildings*
Cheuk Ming Mak, Hai Ming Wong
- 15:00-15:20 #256 - *Improvement of pedestrian level wind comfort near complex of high-rise buildings in Warsaw by using wind protection shields*
Andrzej Flaga, Agnieszka Porowska, Renata Klaput

COFFEE BREAK

[11] Thursday, July 6 (Day 3) – 16:10-17:50

Room 1: Fluid Structure Interaction - Buildings

(Chair: Gianni Bartoli, University of Florence, Italy)

- 16:10-16:30 #98 - *Wind-induced structural forces on MWFRS of low-rise buildings with a 4:12 hipped roof*
Shuai Shao, Yuji Tian, Qingshan Yang, Ted Stathopoulos ★ PHD AWARD CANDIDATE ★
- 16:30-16:50 #188 - *Wind tunnel study of interference effects between twin chimney stacks on spatial distribution of wind loads*
Jiadong Zeng, Mingshui Li ★ PHD AWARD CANDIDATE ★
- 16:50-17:10 #236 - *Interference effects between two elliptic towers: wind tunnel experiments combined with CFD analyses*
Michal Franek, Nicolas Blaise, Thomas Andrianne
- 17:10-17:30 #101 - *Aero-elastic behavior of high-rise buildings under downstream interference effects*
Yuan-Lung Lo, Yong Chul Kim, Akihito Yoshida
- 17:30-17:50 #193 - *Fluid-structure interaction analysis of high-rise building with inner balcony and corner cut*
Takamasa Hasama, Yoshiaki Itoh, Manabu Yamamoto, Toshihide Saka, Koji Kondo, Tetsuro Tamura, Mitsuo Yokokawa

Room 2: Lidar measurement

(Chair: Jasna Bogunovic Jakobsen, University of Stavanger, Norway)

- 16:10-16:30 #149 - *Wind turbulence measurements above the sea in an open fjord inlet using long-range synchronized lidars*
Etienne Cheynet, Jasna Bogunović Jakobsen, Jónas Thór Snaebjörnsson, Guillaume Lea, Benny Svárdal, Jakob Mann, Michael Courtney
- 16:30-16:50 #158 - *Measurement of the wind tunnel simulated boundary layer characteristics using short-range WindScanner Lidars*
Alberto Zasso, Stefano Giappino, Torben Mikkelsen, Mikael Sjöholm, Nikolas Angelou
- 16:50-17:10 #201 - *Vertical mean wind profiles identification using Wind Lidars: an application to the area of Lamezia Terme*
Cristoforo Demartino, Alberto Maria Avossa, Francesco Ricciardelli, Claudia Roberta Calidonna

Room 3: Lattice structures and scaffoldings

(Chair: Vincent de Ville de Goyet, BE Greisch, Belgium)

16:10-16:30	<u>#162</u> - <i>Investigation of crosswind-induced load effects on free-standing lattice towers</i> Ileana Calotescu, Andrea Freda, Giovanni Solari
16:30-16:50	<u>#179</u> - <i>Wind flow patterns around scaffoldings from full-scale measurements</i> Paulina Jamińska-Gadomska, Tomasz Lipecki, Jarosław Bęc, Ewa Blazik-Borowa
16:50-17:10	<u>#180</u> - <i>In-situ measurements of wind action on scaffoldings</i> Paulina Jamińska-Gadomska, Tomasz Lipecki, Jarosław Bęc, Ewa Blazik-Borowa
17:10-17:30	<u>#114</u> - <i>Automatized structural optimization of lattice towers using realistic wind loads</i> Mirko Friehe, Frank Kemper

Room 4: Human comfort

(Chair: Cheuk Ming Mak, Hong Kong Polytechnic University, Hong Kong)

16:10-16:30	<u>#132</u> - <i>The use of CFD vs. wind tunnel testing in wind microclimate assessments</i> Krishan Jayyaratnam, Ruth Shilston, Daniel Hackett
16:30-16:50	<u>#84</u> - <i>Uncertainty quantification of an integral model and a CFD model to predict natural ventilation in Stanford's Y2E2 building</i> Giacomo Lamberti, Catherine Gorlé
16:50-17:10	<u>#145</u> - <i>Design of the Citadel of Bonifacio urban area through experimental and numerical assessment of pedestrian comfort</i> Sylvain Aguinaga, Stephane Sanquer, Dominique Dias, Marc Dufresne de Virel, Julien Guilhot, Cécile Nguyen
17:10-17:30	<u>#130</u> - <i>Revisiting the London wind climate</i> Daniel Hackett

Award Ceremony 18:00-18:45

The Wind Engineer Contest – The PhD Award – Le Prix Innovant – Closing speeches

[12] Friday, July 7 (Day 4) – 08:40-10:40

Room 1: Debris, erosion, sand, snow

(Chair: Mark Sterling, University of Birmingham, UK)

08:40-09:00	<u>#2</u> - <i>Debris path in tornado-like vortices</i> Frederick Bourriez, Mark Sterling, Chris Baker
09:00-09:20	empty slot
09:20-09:40	<u>#171</u> - <i>A new measurement approach to analyse aeolian particle deposition with a 3D photogrammetry technique in the boundary layer wind tunnel</i> Cornelia Kalender, Volkmar Görnandt, Yi Wang, Simon Kosse, Ruediger Hoeffer
09:40-10:00	<u>#217</u> - <i>Experimental investigation of snow accumulation</i> Jennifer Fiebig, Holger Hundborg Koss
10:00-10:20	<u>#64</u> - <i>Numerical modeling of ice accretion shape due to freezing precipitation on engineering structures</i> Krzysztof Szilder

Room 2: Sports aerodynamics

(Chair: Thierry Marchal, ANSYS Belgium, Belgium)

08:40-09:00	<u>#99</u> - <i>A progressive adoption of CFD for sport engineering: from motorsports to athlete-specific modeling</i> Thierry Marchal
09:00-09:20	<u>#11</u> - <i>Numerical analysis of drag of different cyclist positions for hill descent</i> Bert Blocken, Thijs van Druenen, Yasin Toparlar, Thomas Andrianne, Thierry Marchal
09:20-09:40	<u>#29</u> - <i>Numerical analysis of the aerodynamics of cyclists during team time trial rotation</i> Thijs van Druenen, Yasin Toparlar, Bert Blocken, Thomas Andrianne
09:40-10:00	<u>#39</u> - <i>Numerical analysis of aerodynamic forces acting on a couple of cyclists in cross wind conditions</i> Fabio Malizia, Hamid Montazeri, Peter Hespel, Bert Blocken, Thomas Andrianne
10:00-10:20	<u>#43</u> - <i>An investigation of tandem cycling aerodynamics</i> Paul Mannion, Yasin Toparlar, Bert Blocken, Magdalena Hajdukiewicz, Thomas Andrianne, Eoghan Clifford

- 10:20-10:40 **#69** - *Aerodynamic interaction between a motorcycle and cyclist in shifted configurations*
 Yasin Toparlar, Bert Blocken, Thomas Andrianne

Room 3: Trains and vehicle aerodynamics

- (Chair: Dominic Flynn, University of Birmingham, UK)
- 08:40-09:00 **#5** - *The calculation of train stability in tornado winds*
 Christopher Baker
- 09:00-09:20 **#16** - *A full-scale experimental study of freight train aerodynamics*
 David Soper, Chris Baker
- 09:20-09:40 **#20** - *The aerodynamic flow beneath a high speed train: A numerical and experimental analysis*
 Dominic Flynn, David Soper, Adam Jackson, Hassan Hemida, Chris Baker
- 09:40-10:00 **#89** - *Cross-Wind load effects on different vehicle body geometries*
 Kaustav Bhadra, Sabareesh Geetha Rajasekharan, Ram Chandra Murthy K.
- 10:00-10:20 **#9** - *Aerodynamic and hydrodynamics aspects of the operation of trains through floodwater*
 Chris Baker, Hassan Hemida, Andrew Quinn, Mike Jenson, Dominic Flynn
- 10:20-10:40 **#36** - *Aerodynamic force on railway vehicles on an embankment in a turbulent boundary layer flow and a smooth flow*
 Yuhei Noguchi, Minoru Suzuki, Koji Nakade

COFFEE BREAK

[13] Friday, July 7 (Day 4) – 11:10-12:30

Room 1: Wind tunnel design or re-design

(Chair: Olivier Flamand, CSTB, France)

- 11:10-11:30 #185 - *Inflatable walls for wind tunnels*
 Olivier Flamand, Anthony Couzinet, Jean-Christophe Thomas
- 11:30-11:50 #212 - *Jules Verne 2.0, renewal of a large wind tunnel facility*
 Pierre Palier, Jean-Paul Bouchet, Sylvain Aguinaga, Anthony Couzinet,
 Philippe Delpech
- 11:50-12:10 #219 - *Benchmark for self-accreditation*
 Holger Hundborg Koss, Leika D. Jørgensen, Per J. Jørgensen, Morten
 K. Rasmussen

Room 2: Wind Turbines

(Chair: Allan Larsen, COWI, Denmark)

- 11:10-11:30 #107 - *Effects of wind-wave misalignment on the dynamic response of
an offshore wind turbine in highly nonlinear waves*
 Agota Mockute, Enzo Marino, Claudio Borri
- 11:30-11:50 #258 - *Design methods to assess the resistance of offshore wind turbine
structures impacted by a ship*
 Sara Echeverry, Hervé Le Sourne, Andreea Bela, Timothée Pire,
 Philippe Rigo
- 11:50-12:10 #22 - *Determination of aerodynamic damping and vortex-shedding
correlation length of wind turbine towers based on wind tunnel experi-
ments with high frequency force balance (HFFB) and forced-oscillations
methods*
 Robert Fontecha, Frank Kemper, Markus Feldmann

Room 3: Field measurement

(Chair: Ole Øiseth, NTNU, Norway)

- 11:10-11:30 #109 - *Turbulence structures around the Rock of Gibraltar*
 Elvin Hii, Kevin Gouder, Stefano Cammelli, David Hankin
- 11:30-11:50 #189 - *Experimental investigation of wind-induced responses consid-
ering interference of twin chimney stacks*
 Mingshui Li, Ruwei Ma, Bibo Zhong
- 11:50-12:10 #25 - *Field monitoring of the forth road bridge*
 John Owen, Xiaolin Meng

12:10-12:30

#57 - *Wind field characteristics at Hardanger Bridge site: comparison of wind tunnel terrain model tests with full-scale measurements*
Tor Martin Lystad, Aksel Fenerci, Ole Øiseth

LUNCH BREAK

List of authors

Aboshosha H.	– WePM[245]	Baker Christopher	– Bougherra Souhaib	–
Aguinaga Sylvain	– ThPM[145], FrAM[212]	WeAM[5], FrAM[7]	ThAM[6], FrAM[2]	WePM[95]
Ai Zhengtao	– TuPM[228]	Baldomir Aitor	– TuPM[8]	Bourriez Frederick
Alam MD Mahbub	– WeAM[164]	Baniotopoulos Charalampos	– TuAM[59]	Bricteux Laurent
Allsop Andrew	– TuAM[126], WePM[183]	Bartoli Gianni	– TuPM[167], WePM[170], ThPM[214, 257]	Bronkhorst Okke
Amandolèse Xavier	– WeAM[106, 198], ThAM[203]	Bastos Fernando	– ThAM[222]	WePM[47, 48, 50, 115]
Amerio Luca	– TuAM[126], WeAM[141], WePM[166]	Bela Andreea	– FrAM[258]	Buljac Andrija – ThAM[83]
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Angel Jurado José	– TuPM[8]	Bilbao Armando	– WeAM[215]	WeAM[186]
Angelou Nikolas	– ThPM[158]	Blackman Karin	– TuPM[248]	Cabezuelo Lourdes
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Arena Maurizio	– ThAM[108]	Blazik-Borowa Ewa	– TuPM[179, 180]	Caetano Elsa – ThAM[222]
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Avossa Alberto Maria	– TuPM[201], ThPM[202]	Blocken Bert	– TuAM[11], ThPM[27, 29, 39]	– ThPM[201]
Bęc Jarosław	– ThPM[179, 180]	WeAM[43], WePM[69, 111, 118]	– WePM[69, 111, 118], ThAM[122], ThPM[128], FrAM[139, 147, 174, 225, 227]	– Calotescu Ileana
Baker Chris	– WeAM[2], FrAM[9, 15, 16, 20]	Bogunović Jakobsen Jasna	– ThAM[149, 150], ThPM[163]	ThPM[162]
Bouchet Jean-Paul	– FrAM[212]	Borri Claudio	– FrAM[107]	– Cammelli Stefano
				– Cecere Carlo – WePM[111]
				– Cespedes Xavier
				– Chandra Murthy K. Ram
				– FrAM[89]
				– Chang Cheng-Hsin
				– WePM[104]
				– Chang Shi-Xian – WePM[26]
				– Chen Bo – WeAM[53]
				– Chen Chern-Hwa
				– WePM[26]

Chen Wen-Li – TuPM[165]	ThAM[108]	Fiebig Jennifer – FrAM[217]
Cheng Jun – TuPM[71]	Dimitriadis G. – TuAM[233]	Fisher Alex – WeAM[44]
Cheynet Etienne – ThAM[149, 150], ThPM[163]	Ding Fei – ThAM[93]	Flaga Andrzej – TuPM[253, 255], ThPM[256]
Chiu Vincent – WeAM[96]	Doaré Olivier – WeAM[203]	Flaga Lukasz – TuPM[253]
Chmielewski Tadeusz – WePM[35]	Dorigatti Francesco – ThAM[231]	Flamand Olivier – ThAM[185], FrAM[222]
Choumane Aicha – ThPM[18]	Draoui Belkacem – ThPM[18]	Flynn Dominic – WeAM[7, ThAM[9], FrAM[15, 20]
Chrysochoidis-Antsos Niko-laos – TuAM[243]	Duchene Yves – WePM[205], ThAM[208]	Fontecha Robert – FrAM[22]
Chung Chen-Yang – WePM[26]	Duflot Philippe – WeAM[259]	Foti Francesco – TuPM[218]
Churin Pavel – TuAM[250], TuPM[251]	Dufresne de Virel Marc – ThPM[145]	Franchini Sebastián – TuPM[73, 82]
Cindori Mihael – ThPM[110]	Duy Hung Vo – TuPM[42]	Franek Michal – ThPM[236]
Clifford Eoghan – FrAM[43]	Dzijan Ivo – ThPM[110]	Franke Jörg – WeAM[54]
Clothier Reece – WeAM[44]	Echeverry Sara – FrAM[258]	Freda Andrea – WeAM[118], ThPM[162]
Courtney Michael – ThPM[149]	Egorychev Oleg – TuAM[250], TuPM[251]	Friehe Mirko – ThPM[114]
Couzinet Anthony – FrAM[185, 212]	El Damatty Ashraf – TuPM[244, 245], WePM[246, 247]	Görnandt Volkmar – FrAM[171]
Cunha Á lvaro – ThAM[222]	Elatar Ahmed – WePM[142]	Gaczek Mariusz – TuAM[156]
Dallaire Pierre-Olivier – ThAM[231]	Elawady Amal – WePM[247]	Gao Dong-Lai – TuPM[165]
Damele Michela – ThAM[226]	Elezaby Fouad – TuPM[244]	García-Sánchez Clara – WeAM[66], WePM[72]
De Oliveira Fabrice – TuPM[67]	Esposito Maria – ThAM[108]	Gavanski Eri – WePM[117]
Delpech Philippe – FrAM[212]	Fang Fuh-Min – WePM[26]	Ge Hua – WeAM[96]
Demartino Cristoforo – TuPM[201], ThPM[202]	Faria Raquel – WeAM[186]	Geng Feiyu – ThAM[128]
Denoël Vincent – TuPM[239], WeAM[240], ThAM[259]	Fedosova Anastasia – TuAM[250], TuPM[251]	Geurts Chris – WePM[47, 48, 50, 115]
Dias Dominique – ThPM[145]	Feldmann Markus – FrAM[22]	Gherbi Aboubaker – WeAM[94]
Dimatteo Antonio – WeAM[177], WePM[186]	Fenerci Aksel – ThAM[57], FrAM[65]	Giachetti Andrea – WePM[257]
	Fernandes Royston – TuPM[248]	Giappino Stefano – ThPM[158]
	Ferreira Almerindo – WeAM[177], WePM[186]	Gillmeier Stefanie – WePM[3]

González-Montecino	David	Hernández	Santiago	–	Jamińska-Gadomska
– TuPM[82]		ThAM[13]			Paulina – ThPM[179, 180]
Gorlé	Catherine	– Hernandez	Santiago	–	Janssen Wendy
WeAM[66], WePM[72, 78],		TuPM[8], ThAM[154]			WePM[174]
ThPM[80, 84]		Hespel Peter	– FrAM[39]		Jayyaratnam Krishan
Gouder Kevin	– FrAM[109]	Hii Elvin	– FrAM[109]		ThPM[132]
Grundvig Malthe	Marlene	– Hoeffer	Ruediger	–	Jenson Mike – FrAM[9]
ThAM[92]		WePM[125],	ThPM[144],		Jesson Mike – ThAM[7]
Guichard Romain	–	FrAM[171]			Jing Hongmiao – ThPM[238]
ThPM[182]		Hoffmann	Kristoffer	–	Jubayer Chowdhury
Guilhot Julien	– ThPM[145]	WePM[119]			WePM[90]
Guissart Amandine	–	Hong Hanping	– WePM[28]		Juretić Franjo – ThPM[110]
TuAM[233]		Hourigan	Kerry	–	Kalender Cornelia
Hémon Pascal	– TuPM[17],	WeAM[164]			FrAM[171]
WeAM[106]		Hu Gang	– TuPM[19],		Kalkman Ivo – TuAM[27],
Habib Giuseppe	–	WeAM[169]			TuPM[118], WeAM[128],
WeAM[203]		Huang	Sheng-Yin	–	WePM[225], ThAM[227]
Hackett Daniel	– ThPM[130,	WePM[234]			Kareem Ahsan – ThAM[93]
132]		Huk Yaroslav	– TuAM[220]		Kassir Wafaa – TuPM[67]
Hajdukiewicz Magdalena	–	Hulsbosch-Dam	Corina	–	Kato Kusuo – WeAM[74]
FrAM[43]		WePM[50]			Katsuchi Hiroshi
Hangan Horia	– WePM[90,	Ibrahim	Ibrahim	–	TuPM[42], WeAM[51]
142, 176]		WePM[245]			Kemper Frank – ThPM[22],
Hankin David	– FrAM[109]	Ierimonti	Laura	–	FrAM[114]
Hansen Svend Ole	–	TuPM[237]			Kerschen Gaëtan
WePM[119]		Ikegaya Naoki	– ThPM[210]		WeAM[203]
Hargreaves David	–	Imano	Masashi	–	Kikumoto Hideki
TuAM[129]		ThPM[210]			ThPM[210]
Hasama Takamasa	–	Iousef Samy	– TuPM[122]		Kim Hongjin – WeAM[187]
ThPM[193, 210]		Itoh Yoshiaki	– ThPM[193]		Kim Whajung – WeAM[187]
He Mingzhe	– TuPM[197]	J. Álvarez Antonio			Kim Yong Chul
Heck Jean Vivien	–	ThAM[154]			ThPM[101]
TuPM[67]		Jørgensen	Leika D.	–	Kinasz Roman – TuAM[220]
Hemida Hassan	– TuAM[3],	FrAM[219]			Kishida Takeshi
WeAM[7], WePM[9],		Jørgensen	Per J.	–	ThPM[210]
ThAM[15], FrAM[20, 59]		FrAM[219]			Klaput Renata – ThPM[256]
Hendrick Patrick	–	Jackett	Richard	–	Kondo Koji – ThPM[193]
TuAM[242]		WeAM[192]			Kopp Gregory – WePM[28]
Hensen Jan	– TuPM[139]	Jackson Adam	– FrAM[20]		

Koss Holger	Hundborg	–	Li Sihan – WePM[28]	Mambour Jacques	–
FrAM[217, 219]			Li Yi-Chao – WePM[26, 104]	TuAM[242]	
Kosse Simon	– FrAM[171]		Li Yin Fai – ThAM[87]	Mann Jakob – ThPM[149]	
Kosutova Katarina	–		Li Yue – WePM[235]	Mannini Claudio	–
TuPM[139]			Liang Shuguo – WeAM[19]	TuPM[167], WePM[170],	
Kozmar Hrvoje	– ThAM[83],		Liao Haili – WePM[232],	ThPM[214, 257]	
ThPM[110]			ThPM[238]	Mannion Paul – FrAM[43]	
Krajewski Piotr	–		Lipecki Tomasz	Marchal Thierry – FrAM[11,	
TuPM[253]			ThPM[179, 180]	99]	
Kray Thorsten	– WePM[58]		Liu Ming-Yi – WePM[234]	Marino Enzo – FrAM[107]	
Krishnan Ganesh	–		Liu Yingzheng – ThAM[198]	Marino Matthew	–
WeAM[192]			Llarena Javier – WeAM[215]	WeAM[44]	
Kusano Ibuki	– TuPM[8],		Lo Yuan-Lung – ThPM[101]	Marquier André	–
ThAM[154]			Lonfils Timothée	WeAM[106]	
Kwok K.C.S.	– TuPM[169],		TuPM[113]	Marra Antonino Maria	–
ThAM[175]			Lopes A.M.G. – WeAM[186]	ThPM[170, 214]	
Légeron Fédéric	–		LUPI Francesca	Martinelli Luca	–
ThPM[131]			WePM[125], ThPM[144]	TuPM[218]	
Lamberti Giacomo	–		Lynch Paul – WePM[230]	Massai Tommaso	–
WePM[72], ThPM[84]			Lysfjord Magnus	ThPM[214]	
Lander Daniel	– TuAM[157]		WeAM[192]	Matsuda Kazutoshi	–
Langlois Sébastien	–		Lystad Tor Martin	WeAM[74]	
ThPM[131]			FrAM[57]	Matteoni Giulia	–
Larose Guy	– ThAM[231]		Ma Ruwei – FrAM[189]	WePM[230]	
Larsen Allan	– ThAM[92]		Macdonald John	McNamara Robert	–
Le Sourne Hervé	–		TuPM[178, 197]	WeAM[23]	
FrAM[258]			Macháček Michael	Meng Xiaolin – FrAM[25]	
Lea Guillaume	– ThPM[149]		ThAM[83]	Mijorski Sergey	–
Lecce Leonardo	–		Maheux Sébastien	WeAM[192]	
ThAM[108]			ThPM[131]	Mikkelsen Torben	–
Leclercq Tristan	–		Maio Leandro – ThAM[108]	ThPM[158]	
WeAM[106]			Mak Cheuk Ming	Miyamoto Yukari	–
Leroy Amaury	– ThAM[209]		TuPM[175], ThAM[228],	WePM[117]	
Letchford Chris	–		ThPM[252]	Mockute Agota – FrAM[107]	
TuAM[157]			Malher Arnaud	Mohamed Abdulghani	–
Li Danyu	– TuPM[79]		WeAM[203]	WeAM[44]	
Li Hui	– TuPM[165]		Malizia Fabio – FrAM[39]	Montazeri Hamid	–
Li Mingshui	– WePM[188],		Malo Ana – TuPM[82]	TuPM[39], WePM[111],	
ThPM[189, 232], FrAM[238]				ThPM[122], FrAM[147]	

Monti Paolo – WePM[111]	Palusci Olga – WePM[111]	Refan Maryam –
Montoya Miguel Cid – ThAM[13, 154]	Parmentier Benoit – TuPM[113]	WePM[142]
Moore Daniel – TuAM[157]	Parvu Dan – WePM[176]	Repetto Maria Pia –
Moussaoui Abdeljebbar – ThPM[18]	Patruno Luca – TuPM[204], WePM[225]	WeAM[86], WePM[118], ThAM[226]
Naess Arvid – TuPM[229]	Paul Jantje – WePM[58]	Rezaeiha Abdolrahim –
Nahant Michaël – TuAM[242]	Peigneux Christophe – WePM[208]	TuAM[27]
Nakade Koji – FrAM[36]	Peng Tian – TuPM[103]	Ricci Alessio – WeAM[118]
Nakamura Yuta – WeAM[74]	Pentek Mate – WeAM[121]	Ricci Mattia – TuPM[204], WePM[225]
Nakao Keisuke – ThPM[210]	Perotti Federico – TuAM[166]	Ricciardelli Francesco –
Naprstek Jiri – ThAM[172]	Perret Laurent – TuPM[248]	TuPM[201], ThPM[202]
Neophytou Marina – ThPM[147]	Pham Thanh Ha – WeAM[54]	Rigo Philippe – FrAM[258]
Nguyen Cécile – ThPM[145]	Pigolotti Luca – TuPM[167]	Rocchi Daniele –
Nguyen Cung – TuPM[178]	Pire Timothée – FrAM[258]	WeAM[126], WePM[141]
Nguyen Dinh Tung – TuAM[129]	Poddaeva Olga – TuAM[250], TuPM[251]	Romanic Djordje –
Niemann Hans-Juergen – ThPM[144]	Porowska Agnieszka – ThPM[256]	WePM[176]
Nieto Félix – ThAM[13]	Propson Arnaud – ThAM[83, 172]	Ruscheweyh Hans –
Nieto Felix – ThAM[154]	Pospíšil Stanislav – WePM[208]	WePM[38]
Nikolopoulou Marialena – ThAM[41]	Rønne Maja – ThAM[92]	Sada Koichi – TuPM[195]
Niu Jianlei – ThAM[175]	Rønnquist Anders – ThPM[24]	Saka Toshihide – ThPM[193]
Noguchi Yuhei – FrAM[36]	Prudden Samuel – WeAM[44]	Sakhri Nasreddine –
Ogueta Mikel – TuPM[73]	Quinn Andrew – ThAM[7], FrAM[9]	ThPM[18]
Ogueta-Gutiérrez Mikel – TuPM[82]	Rajasekharan Sabareesh – Geetha – FrAM[89]	Salman Abdullahi –
Okaze Tsubasa – ThPM[210]	Ramponi Rubina – WePM[230]	WePM[235]
Ono Hiroki – TuPM[195], ThPM[210]	Rasmussen Morten K. – FrAM[219]	Sandberg Mats –
Oreskovic Christopher – WePM[249]	Refan Maryam – TuPM[73]	ThPM[147]
Orf Leigh – WePM[249]	Rønne Maja – ThAM[92]	Sanquer Stephane –
Owen John – TuAM[25], FrAM[129]	Rønnquist Anders – ThPM[24]	ThPM[145]
Palier Pierre – FrAM[212]	Rajasekharan Sabareesh – Geetha – FrAM[89]	Sanz-Andres Angel –
	Ramponi Rubina – WePM[230]	TuPM[73]
	Rasmussen Morten K. – FrAM[219]	Sasaki Ryoji – ThAM[55]
	Refan Maryam – TuPM[73]	Saudreau Marc –
	Rønne Maja – ThAM[92]	WeAM[106]
	Rønnquist Anders – ThPM[24]	Savory Eric – TuPM[248], WePM[249]
	Rajasekharan Sabareesh – Geetha – FrAM[89]	Scollard Christopher –
	Ramponi Rubina – WePM[230]	ThAM[231]
	Rasmussen Morten K. – FrAM[219]	Serling Mark – ThAM[7]

Sessa Vincenzo – TuPM[56]	Szilder Krzysztof	– Venanzi Ilaria – TuPM[237]
Shao Shuai – ThPM[98]	FrAM[64]	Vigano Giovanni –
Shehata Ahmed – TuPM[246]	Tabata Yuichi – ThPM[210]	WeAM[259]
Shilston Ruth – ThPM[132]	Tadrist Loïc – WeAM[106]	Vita Giulio – TuAM[59]
Shin Kyung-Jae – WeAM[187]	Tamura Tetsuro – ThPM[116], FrAM[193]	Walker Steve – WePM[230]
Shin Seung-Hoon – WeAM[187]	Tamura Yukio – WePM[45]	Wang Jingxue – WePM[45]
Siedziako Bartosz – ThPM[24, 60, 112]	Terrapon V.E. – TuAM[233]	Wang Jungao – ThAM[163]
Sjöholm Mikael – ThPM[158]	Thór Snaebjörnsson Jónas – ThAM[149, 150], ThPM[163]	Wang Junxin – ThPM[238]
Skyvulstad Henrik – ThPM[60]	Thiis Thomas – WePM[177]	Wang Leon (Liangzhu) – TuPM[71]
Soize Christian – TuPM[67]	Thiis Thomas K. – WeAM[77]	Wang Qi – WePM[232]
Solari Giovanni – WePM[86], ThPM[162]	Thomas Jean-Christophe – FrAM[185]	Wang Xiaohong – WeAM[53]
Song Jie – WeAM[19]	Tian Yuji – ThPM[98]	Wang Yi – FrAM[171]
Soper David – FrAM[16, 20]	Tominaga Yoshihide – TuPM[184], ThPM[210]	Watkins Simon – WeAM[44]
Sorribes-Palmer Félix – TuPM[73, 82]	Toparlar Yasin – FrAM[11, 29, 43, 69]	Weerasuriya Asiri – ThAM[175]
Sousa Jorge – WePM[78]	Touzé Cyril – WeAM[203]	Wigo Hans – ThPM[147]
Spence Seymour – ThAM[93]	Tse K.T. – TuPM[169], ThAM[175]	Windhövel Reiner – WePM[38]
Srouji Robin George – WePM[119]	Tsichritzis Leonidas – ThAM[41]	Winkelmann Ulf – WePM[125]
Stathopoulos Ted – WeAM[98], ThPM[184]	Tsoka Stella – WeAM[77]	Wong Hai Ming – ThPM[252]
Stathopoulos Theodore – TuPM[71]	Uchibori Kazuaki – FrAM[116]	Wuchner Roland – WeAM[121], ThAM[143]
Sterling Mark – WeAM[2], WePM[3], FrAM[6]	Ucuncu Mutlu – WePM[230]	Xie Qiang – TuPM[103]
Suda Kentaro – WeAM[74]	Uematsu Yasushi – WePM[55], ThAM[117]	Xu Yuwang – ThPM[112]
Suiker Akke – ThAM[128]	Vacca Luca – ThAM[87]	Yamada Hitoshi – TuPM[42], WeAM[51]
Suzuki Minoru – FrAM[36]	Vanderwel Christina – TuPM[139]	Yamamoto Manabu – ThPM[193]
Svardal Benny – ThPM[149]	Vanvinckenroye Hélène – ThAM[240]	Yang Qingshan – TuPM[45], WeAM[53], WePM[79, 86], ThPM[98]
	Vasaturo Raffaele – TuPM[227]	Yang Tsung-Chin – WePM[104]
		Yokokawa Mitsuo – ThPM[193]

Yoshida Akihito – ThPM[101]	– Zhou Qiang – ThPM[238]	van Bentum Carine –
Yu Yuelong – ThAM[198]	Zurański Jerzy Antoni – TuAM[156]	WePM[47, 48, 50, 115]
Zasso Alberto – TuAM[126], WeAM[141], WePM[158], ThPM[166]	Ángel José – ThAM[154]	van Druenen Thijs –
Zeng Jiadong – ThPM[188]	Øiseth Ole – ThAM[24], ThPM[57, 60, 65], FrAM[112]	FrAM[11, 29]
Zeoli Stéphanie – ThPM[80]	Šarkić Glumac Anina – WePM[125]	van Hooff Twan –
Zhang Jian – TuPM[103]	de Langre Emmanuel – WeAM[106]	TuPM[139]
Zhang Kai – WeAM[51]	de Miranda Stefano – TuPM[204], WePM[225]	van Uffelen Marcel –
Zhang Shi – WePM[86]	de Ville de Goyet Vincent – WePM[205, 206], ThAM[208, 209]	WePM[34]
Zhang Xuelin – ThAM[175]	–	van Wesemael Pieter –
Zheng Qinmin – WeAM[164]	–	TuPM[122, 227]
Zheng-Tong Xie – TuPM[56]	–	van Wijhe Herm Jan –
Zhong Bibo – FrAM[189]	–	WePM[174]
Zhou Dai – WeAM[51]	–	van Wijk Ad – TuAM[243]
	–	van der Knaap Leo –
	–	WePM[115]