

Colloquium n. 629 - Data-driven fluid mechanics

Dates and location

2 April — 4 April 2025, London, UK

Chairperson

Luca Magri

Co-chairperson

Georgios Rigas

Conference fees

- early bird registration fee : **520.00 €**
- early bird PhD student : **420.00 €**
- regular registration fee: **620.00 €**
- regular PhD student: **520.00 €**
- late registration fee: **700.00 €**
- late PhD student: **730.00 €**
- online registration fee: **300.00 €**

What other funding was obtained?

N/A

What were the participants offered?

Lunch, drinks reception, talks, panel sessions, etc.

Applicants (members)

1. Margaux Boxho
2. Sotirios Catsoulis
3. Paola Cinnella
4. Andrew Cleary
5. Guy Cornejo Maceda
6. Nicholas Daultry Ball
7. Pietro De Palma
8. Anh Khoa Doan
9. Lloyd Fung
10. Laurence Griffiths
11. Priyam Gupta
12. Juan Guzman-Inigo
13. Thomas Hunter
14. Yongyun Hwang
15. Solkeun Jee
16. Javier Jimenez
17. Sylvain Laizet
18. Adrien Lefauve
19. Xiaodong Li
20. Alex Liberzon
21. Luigi Marra
22. Miguel Martinez Valero
23. Ricard Montalà
24. Alicia Rodríguez-Asensio
25. Matteo Rosellini
26. Maria Vittoria Salvetti
27. Julio Soria
28. Iacopo Tirelli
29. Aaron Towne
30. Xiao Xue
31. Nick Zang
32. Junjie Zhang
33. Dao Zhou
34. Xiaojue Zhu

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Geers
Eindhoven - The
Netherlands

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Magnaudet
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Professor Kerstin
Weinberg
Siegen - Germany

Applicants (non members)

1. Mahdi Abkar
2. Usamah Adia
3. Lionel Agostini
4. Blessing Mojisola Akinpelu
5. Azza Algaatheem
6. Sergio Augusto Angelini
7. Alessandro Angioi
8. Intesaaf Ashraf
9. Neil Ashton
10. Iliass Azijli
11. Vikram Bajaj
12. Giacomo Baldan
13. Nausheen Basha
14. Vittorio Bauduin
15. Nikos Bempedelis
16. Luca Biferale
17. Owen Brook
18. Michele Alessandro Bucci
19. Tyler Buchanan
20. Uttam Cadambi Padmanaban
21. Gioacchino Cafiero
22. Clément Caillaud
23. Magnus Carlsson
24. Andrea Carlucci
25. Lidia Caros
26. Maxime Casanova
27. Andrea Cassinelli
28. Giorgio Maria Cavallazzi
29. Marco Cayuela
30. Oussama Chaib
31. Chotirawee Chatpattanasiri
32. Adam Clarke
33. Oluwaseun Coker
34. Antonio Colanera
35. Tim Colonius
36. Riccardo Consonni
37. Ginevra Covoni
38. Alireza Darzi
39. Daniel Dehtyriov
40. Simon Demange
41. Lou Denis
42. Grégory Dergham
43. Gregor Doehner
44. Wouter Edeling
45. Morgane Evin
46. Gianmarco Farro
47. Urban Fasel
48. Hossein Fatahian
49. Eliana Fausti
50. Jose Florido
51. Tobias Flynn
52. Enrico Foglia
53. Matthias Franke
54. André Freitas
55. Marian Fuchs
56. Blanca Fuentes Monjas
57. Wilfried Genuist
58. Lucas Gerken Starepravo
59. Alessandro Giannotta
60. Alexis Giauque
61. Georgios Goinis
62. Thomas Goode
63. Harshinee Goordoyal
64. Lou Guerin
65. Christoffer Hansen
66. Isa Helal
67. Benjamin Herrmann
68. Faron Hesse
69. Tom Hickling
70. Simone Hochgreb
71. Miranda Horne
72. Zhao Hou

73. Guangyuan (Dennis) Huang
74. Fabian Hübenthal
75. David Huergo
76. Kacper Janczuk
77. Seohee Jang
78. Paul Jeanney
79. Richard Jefferson-Loveday
80. Sankalp Jena
81. Patrick Jenny
82. Peter Jimack
83. George Klavaris
84. Roman Klopsch
85. Bjoern Klose
86. Jan Krautter
87. Jai Kumar
88. Dibyakanti Kumar
89. Nishant Kumar
90. Oleksandr Kyriienko
91. Christian Lagemann
92. Esther Lagemann
93. Ana Larrañaga
94. Marco Laudato
95. Alexander Lavin
96. Howon Lee
97. Nicolas Lepage
98. Chun Lam Li
99. Haoyan Li
100. Mario Lino
101. Bjoern List
102. Hamish Lister
103. Kevin Liu
104. Alexander Lobbe
105. Didier Lucor
106. Jonas Luther
107. Osama Maklad
108. Iva Manojlović
109. Riccardo Margheritti
110. Javier Martínez Rubio
111. Olaf Marxen
112. Jonathan Massey
113. Ryley Mcconkey
114. Scott Mcisaac
115. Elisabetta Merico
116. Mir Hamed Mohafez
117. Babak Mohammadikalakoo
118. Andrew Mole
119. Thomas Monahan
120. Vincent Mons
121. Benjamin Moore
122. Iraj Mortazavi
123. Tom Moussie
124. Soufiane Mrini
125. Benjamin Musci
126. Salvador Navarro-Martinez
127. Andrea Nóvoa
128. Kasia Nowakowska
129. Kilian Oberleithner
130. Joseph O'Connor
131. Ivan Olarte Rodriguez
132. Anand Oza
133. Adrian Padilla-Segarra
134. Alberto Padovan
135. Jacob Page
136. Andrei Paleyes
137. Shaowu Pan
138. Jonas Pangerl
139. George Papadakis
140. Viraj Patel
141. Daniele Petronio
142. Cristiano Pimenta
143. Moreno Pintore
144. Stefan Posch
145. Lisa Prahll Wittberg
146. Pawel Przytarski
147. Manuel Ratz

148. Joshua Rawden
149. Andrin Rehmann
150. Saleh Rezaeiravesh
151. Gianluigi Rozza
152. Dylan Rubini
153. Ettore Saetta
154. Amine Saibi
155. Ladan Salari
156. Saeed Salehi
157. Marcial Sanchis
158. Mohammed Sardar
159. Luca Saverio
160. Jamie Saw
161. Taraneh Sayadi
162. Stijn Schepers
163. Anna Schwarz
164. Onofrio Semeraro
165. Arindam Sengupta
166. Yazhou Shen
167. Gorka S. Larraona
168. Douglas Smith
169. Nithin Somasekharan
170. Filippo Spiga
171. Pedro Stefanin Volpiani
172. Sean Stokes
173. Kristaps Stolarovs
174. Sean Symon
175. Kunihiro Taira
176. Tianning Tang
177. Hui Tang
178. Renzhi Tian
179. Matteo Tomasetto
180. Niccolò Tonicello
181. Niccolò Tonioni
182. Nicholas Treleaven
183. Giovanni Tretola
184. Filotas Tziaros
185. Adam Venter
186. Rens Vermeulen
187. Luke Vernon
188. Tristan Villanueva
189. Peter Vincent
190. Domagoj Vlah
191. Konstantina Vogiatzaki
192. Marie-Christine Volk
193. Jakob Von Saldern
194. Den Waidmann
195. Andrew Wallis
196. Shuo Wang
197. Yifei Wang
198. Shaofan Wang
199. Zhong-Nan Wang
200. Yanqi Wang
201. Owen Wastell
202. Alastair West
203. Xiang Yang
204. Tao Yang
205. Matteo Zancanaro
206. Dmitriy Zhigunov
207. Yunpeng Zhu
208. Lu Zhu

Scientific report

The inaugural EuroMech/ERCOFTAC Joint Conference successfully took place in London, UK, from April 2nd to 4th, 2025. The event served as a significant platform for the convergence of diverse communities from Fluid Mechanics, Applied Mathematics, and Machine Learning, effectively fostering collaboration at the intersection of these disciplines.

The conference featured a scientific programme comprising about 186 high-quality presentations, selected following a rigorous peer-review process. This included 45 high-impact

“punch talks” of 5 minutes and 141 comprehensive full-length talks of 15 minutes. The event attracted over 250 in-person participants from a wide array of international locations, including the UK, USA, Italy, France, Germany, Switzerland, Spain, the Netherlands, Saudi Arabia, Australia, Belgium, Hong Kong, South Korea, Denmark, Chile, Sweden, Austria, and Israel. Attendees represented a broad spectrum of institutions, spanning academia, national laboratories, and industry.

The three-day programme was structured around three parallel sessions, complemented by four keynote lectures and a dedicated panel discussion. The technical presentations and discussions explored a range of cutting-edge topics, including data assimilation, model discovery, reduced-order modelling, scientific machine learning and its theoretical underpinnings, digital twins, turbulence modelling, flow control and reinforcement learning, physics-constrained adaptive learning, exascale computing and machine learning, and diverse applications across science and engineering.

The conference was privileged to host four distinguished keynote speakers who provided state-of-the-art and diverse perspectives on the development and application of data-driven methods in fluid mechanics:

- **Prof. Mark Girolami**, Chief Scientist at The Alan Turing Institute and Professor at the University of Cambridge.
- **Prof. Steven Brunton**, James B. Morrison Endowed Career Development Professor in Mechanical Engineering at the University of Washington.
- **Prof. Petros Koumoutsakos**, Herbert S. Winokur, Jr. Professor of Computing in Science and Engineering at Harvard University.
- **Prof. Beverley McKeon**, Professor of Mechanical Engineering at Stanford University.

A highlight of the programme was the panel discussion titled “The Future of Science and Fluid Mechanics in an AI Era”. Chaired by Dr. Neil Ashton (Distinguished CAE Product Architect, NVIDIA), the panel brought together leading experts: Paola Cinnella (Sorbonne), Tim Colonius (Caltech), Gianluca Iaccarino (Stanford), Petros Koumoutsakos (Harvard), Luca Magri (Imperial), Beverley McKeon (Stanford), and Taraneh Sayadi (le CNAM). The discussion addressed the current landscape, identified open challenges, and charted potential future directions for the integration of Artificial Intelligence within the field of fluid mechanics.

Number of participants from each country

COUNTRY	PARTICIPANTS
United Kingdom	93
France	35
United States	23
Italy	19
Germany	17
Netherlands	11
Spain	10
Sweden	6
Switzerland	6
Belgium	4
China	4
Denmark	3
Korea South	2
Australia	2

Croatia	2
Chile	1
India	1
Israel	1
Austria	1
South Africa	1
Total	242