



EUROPEAN ACADEMY
of Sciences and Arts

The European Academy of Sciences and Arts
is pleased to invite you to the

Symposium

NEW DIRECTIONS IN NATURAL SCIENCES: Complexity, Machine Learning and Algorithms

6 March 2020
8:30 h – 17:50 h

Kardinal Schwarzenberg Haus
Kapitelplatz 3
5020 Salzburg

In cooperation with Credit Suisse (Luxembourg) S.A
Zweigniederlassung Österreich

REGISTRATION

EUROPEAN ACADEMY OF SCIENCES AND ARTS

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PROGRAMME

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| 08:30-08:35 | EASA President Felix Unger Opening Address |
| 08:35-08:50 | Dean of Class IV „Natural Sciences“ Klaus Mainzer (Technical University of Munich and University of Tübingen): Complexity, Machine Learning and Algorithms |
| Session I | Chair: Willibald Plessas (University of Graz) |
| 08:50-09:25 | Mirjam Cvetic (University of Pennsylvania, Philadelphia): Unification of Fundamental Forces of Nature by Modern String Theory |
| 09:30-10:05 | Felicitas Pauss (ETH Zürich): Science Without Borders: From Infinitely Small to Infinitely Large |
| 10:10-10:45 | Tomaz Prosen (University of Ljubljana): Dynamical Complexity and Chaos in Quantum Many-Body Systems |
| 10:50-11:10 | ☕ Coffee, Tea |
| Session II | Chair: Marko Robnik (University of Maribor) |
| 11:10-11:45 | Ferenc Krausz (MPI for Quantum Optics Munich): Attosecond Science: From Basic Research to Cancer Detection |
| 11:50-12:25 | Kurt Wüthrich (Scripps Research, La Jolla, and ETH Zürich and iHuman Institute, ShanghaiTech University): Biophysics and Structural Biology |
| 12:30-13:05 | Marc-Thorsten Hütt (Jacobs University Bremen): How Patterns in Data Help Us Understanding Biological Complexity |
| 13:10-14:00 | 🍽️ Lunch |
| Session III | Chair: Mirjam Cvetic (University of Pennsylvania) |
| 14:00-14:35 | Valery Kozlov (Russian Academy of Sciences): Quadratic Laws of Conservation of Equations in Mathematical Physics |
| 14:40-15:15 | Gisbert Wüstholtz (ETH and University of Zürich): Computability, Complexity, and Effectivity in Number Theory |
| 15:20-15:55 | Dusan Repovs (University of Ljubljana): Topologically-Based Machine-Learning Methods |
| 16:00-16:20 | ☕ Coffee, Tea |
| Session IV | Chair: Klaus Mainzer (TU Munich and University of Tübingen) |
| 16:20-16:55 | Dirk Inzé (Ghent University): Solving the Complexity of Biological Systems |
| 17:00-17:35 | Markus Hengstschläger (Medical University of Vienna): Medical Genetics in Digital Transformation |
| 17:40 | General Discussion and Closing |