



# **Programme of the Nineteenth International Conference on Membrane Computing (CMC19)**

**4 - 7 September 2018**

**NH Conference Centre Dresden-Neustadt (Germany)  
organised by the Friedrich Schiller University Jena  
under the auspices of the  
International Membrane Computing Society (IMCS)**

## CMC19

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Nineteenth International Conference on Membrane Computing  
<http://cmc19.uni-jena.de>

## Conference Venue

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NH Hotel and Conference Centre Dresden-Neustadt  
Hansastraße 43  
D-01097 Dresden

Ground floor conference room

## Local Organisers

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**Jörn Behre**  
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## Sponsors and Supporters

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## **Programme Committee**

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- Henry Adorna (Quezon City, Philippines)
- Bogdan Aman (Iasi, Romania)
- Jörn Behre (Jena, Germany)
- Matteo Cavaliere (Manchester, UK)
- Erzsébet Csuhaj-Varjú (Budapest, Hungary)
- Lucas Eberhardt (Leipzig, Germany)
- Giuditta Franco (Verona, Italy)
- Rudolf Freund (Vienna, Austria)
- Marian Gheorghe (Bradford, UK)
- Thomas Hinze (Jena, Germany) - co-chair
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- György Vaszil (Debrecen, Hungary)
- Sergej Verlan (Paris, France)
- Claudio Zandron (Milan, Italy) - co-chair
- Gexiang Zhang (Chengdu, China)

## **Dresden Taxi (24/7) Phone Number**

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+49 351 211 211, roughly EUR 20.00 ... 30.00 for typical city fares.

## **Emergency Calls**

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110 (police)

112 (medical aid / emergency aid)

## List of Registered Participants

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# Conference Programme

## Tuesday, 04 September

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09:00 - 09:30 Registration

09:30 - 10:00 **Opening Ceremony**

10:00 - 10:30 Invited Talk

**Gheorghe Paun**  
*Membrane Computing after 20 Years*

10:30 - 11:00 Coffee Break

Session 1 Theoretical Insights

11:00 - 11:40 **A. Leporati, L. Manzoni, G. Mauri, A.E. Porreca, C. Zandron**  
*Solving QSAT in Sublinear Depth*

11:40 - 12:20 **A. Alhazov, R. Freund, S. Ivanov, S. Verlan**  
*Tissue P Systems with Point Mutation Rules*

12:20 - 14:00 Lunch Break

Session 2 Variants of P Systems I

14:00 - 14:40 **R. Ceterchi, A.K. Nagar, K.G. Subramanian**  
*Chain Code P System Generating a Variant of the Peano Space-filling Curve*

14:40 - 15:20 **A. Henderson, R. Nicolescu**  
*Actor-like cP Systems*

15:20 - 16:00 **M. Gheorghe, F. Ipate, R. Lefticaru, A. Turlea**  
*Testing Identifiable Kernel P Systems using an X-machine Approach*

16:00 - 16:30 Coffee Break

Session 3 Variants of P Systems II

16:30 - 17:10 **J.M. Sempere**  
*Decision Trees and Random Forests Modeling by using P Systems*

17:10 - 17:50 **G. Ciobanu, E.N. Todoran**  
*A Semantic Investigation of Spiking Neural P Systems*

17:50 - 18:30 **B. Aman, G. Ciobanu**  
*Adaptive P Systems*

## Wednesday, 05 September

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09:30 - 10:30 Keynote

**Erzsébet Csuhaj-Varjú**

*How Membrane Computing Influences Theoretical Computer Science*

10:30 - 11:00 Coffee Break

Session 4 Applications I

11:00 - 11:40 **P. Sosik, V. Smolka, J. Bradik, M. Garzon**  
*Modeling Plant Development with M Systems*

11:40 - 12:20 **B. Förster, T. Hinze**  
*Towards Automated Analysis of Belousov-Zhabotinsky Reactions in a Petri Dish by Membrane Computing using Optic Flow*

12:20 - 14:00 Lunch Break

14:00 - 15:00 Invited Talk

**Thomas Preußner**

*A Brute-Force Solution to the 27-Queens Puzzle Using Distributed Computation*

15:00 - 15:30 Coffee Break

Session 5 Membrane-based Algorithms

15:30 - 16:10 **X. Song, H. Peng, J. Wang, G. Ning, T. Wang, Z. Sun, Y. Xia**  
*On Small Universality of Spiking Neural P System with Multiple Channels*

16:10 - 16:50 **S. Yan, J. Xue, X. Liu**  
*An Improved Quicksort Algorithm Based on Tissue-like P Systems with Promoters*

16:50 - 17:20 **G. Paun**  
Presentation of (E)CMC20 Venue

17:20 - 19:00 SC and IMCS Meeting

## Thursday, 06 September

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09:30 - 10:30 Invited Talk

**Alberto Leporati**

*Time and Space Complexity of P Systems - And Why They Matter*

10:30 - 11:00 Coffee Break

Session 6 Applications II

11:00 - 11:40 **M.A. Martinez-Del-Amor, D. Orellana-Martin, I. Perez-Hurtado, L. Valencia Cabrera, A. Riscos-Nunez, M.J. Perez-Jimenez**

*Simulation of Computing P Systems: A GPU Design for the Factorization Problem*

11:40 - 12:20 **A. Melcher, I. Vukorep, T. Hinze**

*Construction of Stable and Lightweight Technical Structures Inspired by Ossification of Bones using Osteogenetic P Systems*

12:20 - 14:00 Lunch Break

14:00 - 18:30 **Touristic Excursion**

Guided sightseeing and bus tour - Highlights of the city centre - Baroque parks and gardens – Pillnitz: palaces in Chinese style, museum, and park - Vineyards along the Elbe river - Dresden funicular railway

18:30 – 22:30 **Dinner** at Restaurant **Luisenhof** Dresden, Bergbahnstraße 8, 01324 Dresden

## Friday, 07 September

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09:30 - 10:30 Invited Talk

**Stefan Schuster**

*Algebra Meets Biology*

10:30 - 11:00 Coffee Break

Session 7 Late Contributions

11:00 - 11:30 **L. Cienciala, L. Ciencialova, E. Csuhaj-Varjú, G. Vaszil**

*Verifying APCol Systems*

11:30 - 12:00 **H. Happe**

*Chemical Analog Computing with Negative Numbers*

12:15 - 12:30 Awards and JMC Nominations

12:30 - 12:45 Closing