

**Agenda and Minutes of the Meeting of TC 2.4 “Optimal Control”  
within the 17th IFAC Workshop “Control Applications of Optimization” CAO 2018**  
October 15 – October 19, 2018, Yekaterinburg,  
Krasovskii Institute of Mathematics and Mechanics – IMM UrB RAS  
Tuesday, October 16, 14:20 – 15:00, Oktyabrskaya VIP Hall

*Chair of TC 2.4 Meeting*

*TC 2.4 Vice-Chair: Alexander Tarasyev, e-mail: [tam@imm.uran.ru](mailto:tam@imm.uran.ru)*

*Co-Chairs of TC 2.4 Meeting*

*TC 2.4 Member: Vladimir Turetsky, e-mail: [turetsky1@braude.ac.il](mailto:turetsky1@braude.ac.il)*

*TC 2.4 Member: Sorin Olaru, e-mail: [sorin.Olaru@centralesupelec.fr](mailto:sorin.Olaru@centralesupelec.fr)*

**Topics for discussion:**

1. New scientific areas for TC 2.4.

*Decision.* Possible new scientific topics could be:

Hamilton-Jacobi equations for systems stabilization

Pontryagin’s maximum principle for optimal control problems with infinite horizon

Control of systems with evolving dynamics

Inverse optimal control problems

2. Working Groups WGs; Internet pages of WGs at the TC 2.4 site.

*Decision.* In previous periods, there were six working groups within TC 2.4:

WG 2.4.1 “Control Applications of Optimization”

Chair: Faina M. Kirillova, e-mail: [kirill@nsys.minsk.by](mailto:kirill@nsys.minsk.by)

It considers modeling for control optimization, large-scale optimization problems, non-smooth and discontinuous problems, optimization under uncertainties including the theory of noise measurements, control of partial differential equations, real-time control.

WG 2.4.2 “Dynamic Game Theory and Applications”

Chair: Anatolii F. Kleimenov, e-mail: [kleimenov@imm.uran.ru](mailto:kleimenov@imm.uran.ru)

It focuses on antagonistic and non-antagonistic differential and time-discrete games, different types of solutions, numerical algorithms for construction of solutions, generalized solutions of Hamilton-Jacobi-Isaacs equations.

WG 2.4.3 “Hamiltonian Trajectories in Mathematical Economics”

Chair: Tapio Palokangas, e-mail: [Tapio.Palokangas@helsinki.fi](mailto:Tapio.Palokangas@helsinki.fi)

WG addresses optimal control and dynamic optimization problems in models of mathematical economics including analysis of economic growth trends, search of equilibrium, econometric forecasting.

WG 2.4.4 “Control of Switched, Linear Systems”

Chair: Sándor Molnár, e-mail: [smol@sysexpert.com](mailto:smol@sysexpert.com)

WG “Control of Switched, Linear Systems” researches problems of controllability and observability of switching, switched and connected systems with specific focus on the case of hybrid systems.

WG 2.4.5 “Evolutionary Computation”

Chair: Patrick Siarry, e-mail: [siarry@univ-paris12.fr](mailto:siarry@univ-paris12.fr)

It deals with development of evolutionary algorithms including swarm intelligence algorithms (such as ant colony algorithms, particle swarm optimization), and "classical" metaheuristics, working without a population of solutions.

WG 2.4.6 "High-Performance Computing in Optimization"

Chair: Neculai Andrey, e-mail: [nandrei@ici.ro](mailto:nandrei@ici.ro)

In the present time, these WGs are not active. It is necessary to make upgrade of their activities and think about creation of new WGs.

3. Organization of invited sessions at the next 21th IFAC World Congress, IFAC 2020, Berlin, Germany, July 12-17, 2020.

*Decision.* It is necessary to attract attention of CAO 2018 participants to this opportunity and encourage them in organization of invited sessions and open invited tracks at the next 21th IFAC World Congress, IFAC 2020.

4. Organization of the next 18th IFAC Workshop (Conference) "Control Applications of Optimization" – CAO'2021-2022.

*Decision.* It is worth to assess three proposals for venue and time:

München, Germany, September-October 2021 or 2022, Prof. Stefan Pickl, e-mail:

[stefan.pickl@unibw.de](mailto:stefan.pickl@unibw.de)

Paris, France, September-October 2021 or 2022, Prof. Sorin Olaru, e-mail:

[sorin.Olaru@centralesupelec.fr](mailto:sorin.Olaru@centralesupelec.fr)

Krakow, Poland, September-October 2021 or 2022, Prof. Andrzej Turnau, e-mail:

[atu@agh.edu.pl](mailto:atu@agh.edu.pl)

5. Raising of CAO status within IFAC scientific events.

*Decision.* It is worth to recommend to raise the CAO status within IFAC scientific events from "Workshop" to "Conference" in view of number of participants at CAO 2018.

6. TC 2.4 publication policy:

*Decision.* There is a proposal to recommend extended versions of CAO papers to IFAC journals and further advertise such journals as:

"Trudy Instituta Matematiki i Mekhaniki UrO RAN" – Proceedings of Krasovskii Institute of Mathematics and Mechanics UB RAS. It is indexed in "Emerging Sources Citation Index WoS" (since 2018) <http://trimm.uran.ru/>;

"Ural Mathematical Journal" <https://umjuran.ru>.

7. CAO 2018 Young Author Awards.

*Decision.* It is recommended to give four CAO 2018 Young Author Awards:

Verena Neisen – Paper 62, "Supervisory Model-based Control using Mixed Integer Optimization for Stationary Hybrid Fuel Cell Systems", Verena Neisen, Florian Joseph Baader, Dirk Abel, Institute of Automatic Control, RWTH Aachen University, 52074, Aachen, Germany; e-mail: [v.neisen@irt.rwth-aachen.de](mailto:v.neisen@irt.rwth-aachen.de)

Yoshiaki Matsukawa – Paper 34, "Optimal Placement and Tuning Approach for Design of Power System Stabilizers and Wide Area Damping Controllers Considering Transport Delay", Yoshiaki Matsukawa, Masayuki Watanabe, Hibiki Takahashi, Yasunori Mitani,

Department of Electrical and Electronic Engineering, Kyushu Institute of Technology, 1-1 Sensui-cho, Tobata-ku, Kitakyushu, 804-8550, Tel: +81-93-884-3227, Japan; e-mail: [p349532y@mail.kyutech.jp](mailto:p349532y@mail.kyutech.jp)

Ziwei Wang – Paper 182, “Chattering-free Fixed-Time Control for Bilateral Teleoperation System with Jittering Time Delays and State Constraints”, Ziwei Wang, Bin Liang, Xueqian Wang, Department of Automation, Tsinghua University, Beijing 100084, China; e-mail: [wang.xq@sz.tsinghua.edu.cn](mailto:wang.xq@sz.tsinghua.edu.cn)

Mikhail Gomoyunov – Paper 69, “On the Stability of a Solution of a Guarantee Optimization Problem under a Functional Constraint on the Disturbance”, Mikhail Gomoyunov, Valeriya Karandina, Ilya Mezentsev, Dmitrii Serkov, Krasovskii Institute of Mathematics and Mechanics of the Ural Branch of the Russian Academy of Sciences, S. Kovalevskaya Str. 16, Yekaterinburg, 620990, Russia; Ural Federal University, Mira str. 19, Yekaterinburg, 620002, Russia; e-mail: [m.i.gomoyunov@gmail.com](mailto:m.i.gomoyunov@gmail.com)

#### 8. TC 2.4 membership.

*Decision.* CAO 2018 participants Prof. Prof. Andrzej Turnau, e-mail: [atu@agh.edu.pl](mailto:atu@agh.edu.pl), and Prof. Tapio Palokangas, e-mail: [tapio.palokangas@helsinki.fi](mailto:tapio.palokangas@helsinki.fi), have expressed their intention to continue their membership in TC 2.4 on Optimal Control, and participants of TC 2.4 meeting within CAO 2018 welcome and support their involvement.