

# Conference on Cooperative Control and Optimization

November 12–14, 2001

CENTER FOR APPLIED OPTIMIZATION, UNIVERSITY OF FLORIDA  
AND AIR FORCE RESEARCH LABORATORY

University of Florida Hotel & Conference Center  
Gainesville, FL

Organizers: Robert Murphey (murphey@eglin.af.mil)  
Panos Pardalos (pardalos@ufl.edu)  
Sergiy Butenko (butenko@ufl.edu)

**SCHEDULE**

## Sunday, November 11, 2001

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4:00–6:00 pm    **Registration**  
University of Florida Hotel & Conference Center Lobby

## Monday, November 12, 2001

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8:00 am–1:00 pm    Registration  
8:30                Opening Remarks from Conference Organizers  
8:35                Welcome from Dr. Pramod Khargonekar,  
                          Dean of the University of Florida College of Engineering

**Session M.1**    Chairman: Panos Pardalos

8:50                Siva S. Banda and Phillip R. Chandler  
                          **Cooperative UAV Control**<sup>1</sup>

9:20                Jonathan How  
                          **Coordination and Control for Cooperating UAV's**<sup>1</sup>

9:50                Phillip R. Chandler and Corey J. Schumacher  
                          **Coupling in UAV Cooperative Control**

10:20 –10:40        **Break**

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<sup>1</sup> This talk is a part of the AFOSR Cooperative Control Theme special session

# Monday, November 12, 2001

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## Session M.2 Chairman: Robert Murphey

- 10:40 Stephen T. Pledge, Yongxing Hao, Armando M. Ferreira, Sunil K. Agrawal, and Robert Murphey  
**Groups of Unmanned Vehicles: Differential Flatness, Trajectory Planning, and Tracking Control**
- 11:10 K. Passino, M. Polycarpou, D. Jacques, M. Pachter, M. Mears, P. Chandler, M. Baum, Y. Liu, , M. Flint, Y. Yang  
**Cooperative Control for Autonomous Air Vehicles**
- 11:40 Myungsoo Jun and Raffaello D'Andrea  
**Route Algorithm for Autonomous Vehicles in Adversarial Environments**
- 12:10-1:40 **Lunch**

## Session M.3 Chairman: Sergiy Butenko

- 1:40 Sergiy Butenko, Xiuzhen Cheng, Ding-Zhu Du, and Panos Pardalos  
**On the Construction of Virtual Backbone for Ad Hoc Wireless Network**
- 2:10 Meir Pachter and Jeffrey Hebert  
**Optimal Trajectories for Cooperative Classification**
- 2:40 Gokhan Inalhan, Duvsan Stipanovic and Claire J. Tomlin  
**Decentralized Optimization, with Application to Multiple Aircraft Coordination**
- 3:10-3:30 **Break**

## Monday, November 12, 2001

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**Session M.4** Chairman: Panos Pardalos

3:30 Aveek Das, Vijay Kumar, John Spletzer, and Camillo Taylor  
**Communication and Sensory Networks for Formation Control**

4:00 Eduardo Pasiliao  
**Approach angles to multiple targets**

4:30 Panos Pardalos and Vitaliy Yatsenko  
**Cooperative Control of Physical Processes, Geometrical Structures,  
and Optimization**

7:00 **Banquet Dinner**

## Tuesday, November 13, 2001

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**Session T.1**    Chairman: Panos Pardalos

8:00 am–1:00 pm    Registration

8:30                David R. Jacques  
**Search Allocation, Classification, and Attack Decision Algorithms  
for Cooperative Wide Area Search Munitions**

9:00                Samuel Wu, Z. Max Shen, C. T. C. Mo, R. Chen and M. C. K. Yang  
**Optimal Sequential Allocation with Imperfect Feedback Information**

9:30                William W. Hager and Yaroslav Krylyuk  
**Multiset Graph Partitioning**

10:00 –10:30        **Break**

**Session T.2**    Chairman: Sergiy Butenko

10:30                Victor Korotkich and Galina Korotkich  
**On Computational Control Theory for Optimality Condition of  
Cooperative Agents**

11:00                Henry Pfister  
**Sweep Optimization for Wide Area Search and Attack with  
Cooperative Entities**

11:30                **Open Discussion: Future Direction of Cooperative Control**  
led by Robert Murphey

12:00-1:30        **Lunch**

**Tuesday, November 13, 2001**

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**Session T.3** Chairman: Robert Murphey

**(AFOSR Cooperative Control Theme)**

1:30 Belinda King  
**Special Session Introduction: The AFOSR Cooperative Control Theme**

2:00 Johnny Evers  
**Biologically Inspired Guidance and Sensor Systems for  
Cooperative Autonomous Air and Space Vehicles**

2:30 P. Krokhmal , R. Murphey , P. Pardalos , S. Uryasev and G. Zrazhevski  
**Robust Decision Making: Addressing Uncertainties in Distributions**

3:00 – 3:30 **Break**

**Session T.4** Chairman: Panos Pardalos

**(AFOSR Cooperative Control Theme)**

3:30 Martin Frank  
**Real-Time Marbles: A Scheme for Adaptive Distributed  
Resource Allocation**

4:00 Patrick Shoemaker and David O'Carroll  
**Biological and Silicon Modeling of Moving Target Detection in Insects**

4:30 Lars Cremean, Jason Meltzer, Ben Lee, Richard Murray  
**The Caltech Multi-Vehicle Wireless Testbed: Initial Implementation**

7:00 **Conference Dinner**

## Wednesday, November 14, 2001

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**Session W.1** Chairman: Panos Pardalos

**(AFOSR Cooperative Control Theme)**

- 8:30 P. S. Krishnaprasad  
**Dynamics and Control of Agile Formations**
- 9:00 Ronald Mahler  
**Technologies leading to unified multi-agent collection and coordination**
- 9:30 R. K. Prasanth, J. D. Boskovic, R. K. Mehra and R. P. Mahler  
**Mixed Integer/LMI Programs for Low-Level Path Planning**
- 10:00 Eric Klavins  
**Automatic Synthesis of Controllers for Distributed Assembly and Formation Forming**
- 10:30-11:00 **Break**

**Session W.2** Chairman: Robert Murphey

- 11:00 Aubrey B. Poore  
**Network MFA**
- 11:30 Carlos Oliveira  
**Reactive GRASP with Path Relinking for Channel Assignments in Mobile Phone Networks**
- 12:00 George Barbastathis and Arnab Sinha  
**Collective Vision Using Volume Holographic Optical Elements**
- 12:30 **Closing Remarks**