



2005 Annual Review of the
AFRL/VA and AFOSR

**Ohio State University**

# Collaborative Center of Control Science


November 29-30, 2005

*(Attachment: Directions and Accommodation Information)*

**Tuesday, Nov. 29: The Blackwell, Pfahl Executive Conference Center**
**Rm. 140 Pfahl Hall**

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|---|---|
| 8:30am | Registration and Continental Breakfast |
| 9:00am | Opening Remarks<br>Siva Banda |
| 9:15am | Welcome to Collaborative Center of Control Science (CCCS) and Program Overview<br>Kevin Passino |

**Cooperative Control for Autonomous Air Vehicles**

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|---|---|
| 9:45am | Autonomous Vehicles Experimental Program Overview<br>Ümit Özgüner, Keith Redmill, John Martin, George McWilliams |
| 10:15am | Distributed Sensor Fusion with Mobile Sensor Agents<br>Ümit Özgüner, Zhijun Tang |
| 10:45am | Break |
| 11:00am | Cooperative Pursuit of Detected and Predicted Threats<br>Joe Cruz, Dongxu Li |
| 11:30am | Cooperative Path Planning and Task Assignment for Micro-UAVs in an Urban Environment<br>Raúl Ordóñez, Shreecharan Kanchanavally |
| 12:00pm | Lunch |
| 1:00pm | Stable Cooperative Search and Surveillance<br>Kevin Passino, Joe Cruz, Alvaro Gil, Jorge Finke, Brandon Moore |

**Space Access and Hypersonic Vehicle Guidance and Control**

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|---|---|
| 1:45pm | Model-Based Control Strategies for an Air-Breathing Hypersonic Vehicle<br>Andrea Serrani, Steve Yurkovich, Jason Parker, David Sigthorsson |
| 2:30pm | Trajectory Generation on Approach and Landing for RLVs Using Maneuver Primitives<br>Raúl Ordóñez, Zhesheng Jiang |
| 2:45pm | Break |

**Aerodynamic Flow Control**

3:00pm Reduced-Order Modeling and Experiments for
Feedback Control of Cavity Flows
Mo Samimy, Marco Debiasi, Edgar Caraballo, Jesse Little

4:00pm Controller Design for Feedback Control of Cavity Flows
Andrea Serrani, Peng Yan, Xin Yuan, Cosku Kasnakoglu

4:45pm Break

**Poster Session: Pfahl Executive Conference Center, Lobby Area**

5:00pm Posters for Overview of Additional Projects,
Cooperative Control and Reusable Launch Vehicles

OSU Team ION for DARPA Grand Challenge
Keith Redmill

Robust Data Alignment
Sangil Jwa

Grouped Vehicles within a Cellular Spatial Structure
Yongling Zheng

Cooperative Mobile Target Capture Using
Artificial Potentials and Sliding Mode Control
Jingyi Yao

Cooperative Agent Distributions for Persistent Area Surveillance
Jorge Finke

Cooperative Vehicle Operations for Patrol
Brandon Moore

Anti-Windup Design for Control of Airbreathing Hypersonic Vehicles
Lisa Fiorentini, Kevin Groves

Table Generation and Curve-Fitting for Airbreathing
Hypersonic Vehicle Modeling
Jason Parker, Pete Jankovsky

**Tuesday Evening Activities:**

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| 6:30pm | Cocktails and Hors d'oevres<br>The Blackwell, Ball Room Lobby (second floor) |
| 7:30pm | Dinner (on site)<br>The Blackwell, Banquet/Ball Rooms A& B |

**Wednesday, Nov. 30: Aeronautical and Astronautical Research Laboratory (AARL)**
**Gas Dynamics and Turbulence Laboratory (GDTL)**
**Demonstrations and Evaluation**

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|---|---|
| 8:00am | Continental Breakfast, Conference Room, GDTL, Rm. 100 |
| 8:30am | Introduction to GDTL and Flow Control Demonstration<br>Mo Samimy |
| 9:00am | Posters for Overview of Additional Projects in<br>Aerodynamic Flow Control |
| | Modeling and Control of an Acoustic Actuator for Cavity Flow Control<br>Ryan Schultz |
| | Development of Flow Control Strategies for<br>Mitigation of Aero-optic Distortion<br>Jacob George |
| | Development and Application of Novel Plasma Actuators for<br>Flow and Acoustic Control<br>Jeff Kastner |
| 9:30am | Demonstrations for Executive Board: Closed-Loop Flow Control<br>Discussions on Experimental Plans |
| 10:30am | Demonstrations for Attendees: Closed-Loop Flow Control |
| 10:30am | CCCS Executive Board Meeting (closed meeting),<br>Conference Room, GDTL, Rm. 100 |
| 11:30am | CCCS Executive Board Feedback to CCCS Investigators<br>(open meeting), Conference Room, GDTL, Rm. 100 |
| 12:00pm | Meeting ends |

**Directions and Accommodations**
AFRL/VA and AFOSR supported

**The Ohio State University**

## Collaborative Center of Control Science (CCCS)

# Hotel Information

The Blackwell http://www.theblackwell.com/about/
2110 Tuttle Park Place
Columbus, Ohio 43210

Phone: 614-247-4000
Call for reservations, toll free: 866-247-4003

Location: On the east side of Tuttle Park Place Ave. between Lane Ave. and Woody Hayes Dr. See directions below.

Holiday Inn on the Lane http://www.holidayinnosu.com/
328 W. Lane Ave.
Columbus, Ohio 43210

Phone: 614-294-4848
Call for reservations, toll free: 800-465-4329

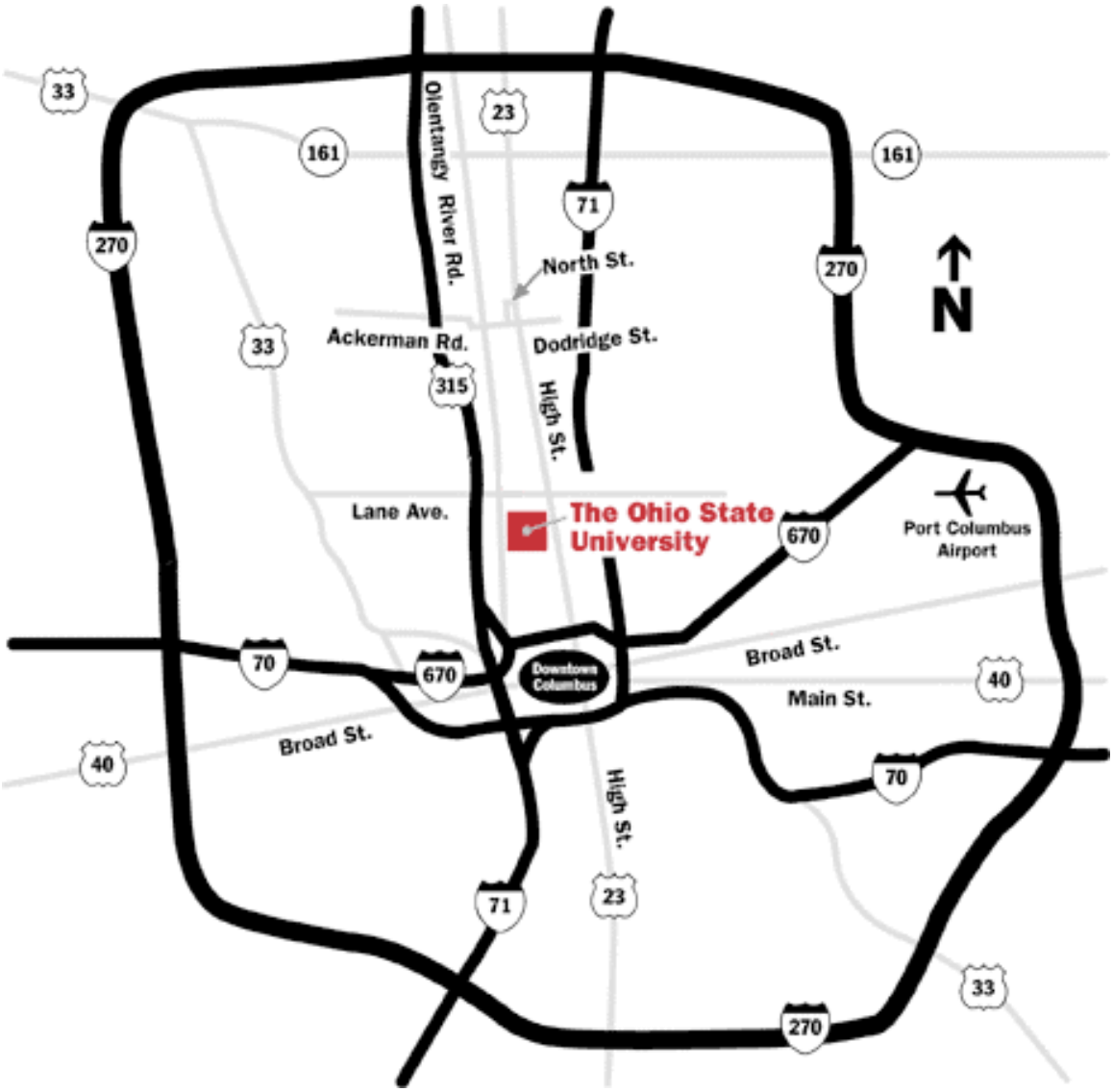
Location: On the north side of Lane Ave., east of 315 (and of Olentangy River Rd.) and just west of Tuttle Park Place Ave. See directions below.

Alternate Hotel: The University Plaza Hotel - http://www.universityplazaosu.com/
3110 Olentangy River Rd.
Columbus, Ohio 43202
Phone: (614) 267-7461

Location: Go north on Olentangy River Rd. from Lane Ave., about a mile and on right hand side.

For more information on accommodations, see http://www.osu.edu/visitors/

# Directions to The Ohio State University*




## Directions to OSU Campus:

### From the north:

Take any major highway to I-270. Take I-270 to SR 315 south. From SR 315 south, exit at Lane Avenue and turn left.

### From the south:

Take any major highway to I-71 north. Take I-71 north to SR 315

north. Exit at Lane Avenue and turn right.

**From the west:**
Take any major highway to I-70 east. Take I-70 east to I-670 east to SR 315 north. Exit at Lane Avenue and turn right.

**From the east:**
Take any major highway to I-70 west. Take I-70 west to SR 315 north. Exit at Lane Avenue and turn right.

**From Port Columbus International Airport:**
Take I-670 west to SR 315 north. Exit at Lane Avenue and turn right.

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* From OSU Visitor Guide. For more details, if you have access to the web, click here.

# Directions to The Blackwell Hotel and Holiday Inn

1. Go east on Lane Avenue from SR 315.
2. Holiday Inn is on your right (north) after you cross the river.
3. Blackwell: Continue past the Holiday Inn and take a right on Tuttle Park Place.
4. The Blackwell is on the east side of Tuttle Park place, immediately on your left (i.e., at the corner of Tuttle Park Place and Woody Hayes Dr.).

## See map below for more details:

The Blackwell is Building 254

Pfahl Hall, Pfahl Executive Conference Center is Building 253

Holiday Inn on the Lane is the cream and white-topped building in the top-right corner of the map below.

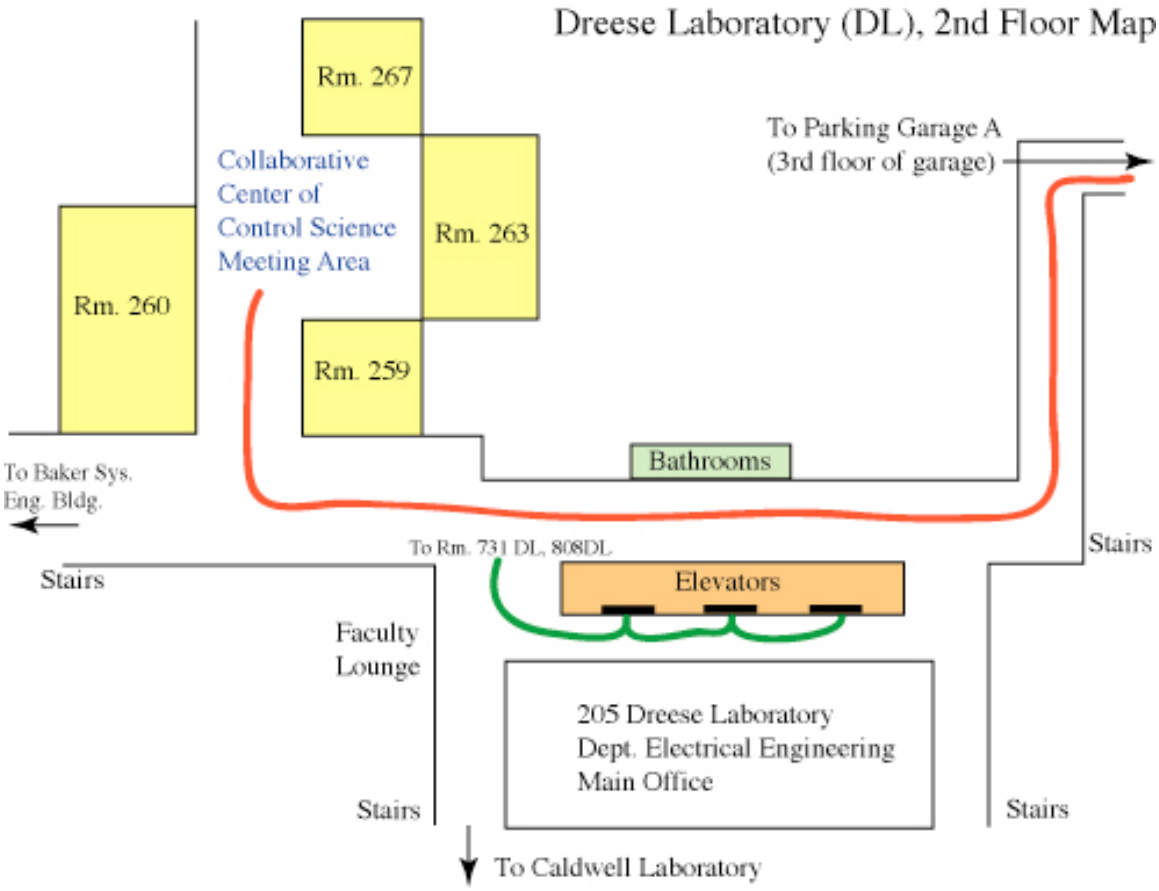
# Directions to Dreese Laboratory


Go east on Lane Avenue from 315.

Turn right on Tuttle Park Place (road next to stadium) and then turn left into Garage D (Tuttle Park Place Garage).

You may walk to Dreese Laboratory, which is nearby, just to the southeast of the Tuttle Park Place Garage (see above map).

# Directions to Dreese Laboratory Second Floor
(normally used for 6 Month Review)




# Directions to OSU Aeronautical and Astronautical Research Laboratory / Gas Dynamics and Turbulence Laboratory:

Coming from Campus, take SR **315** North, exit at **Bethel Rd**.
Drive *westward* to **Godown Rd**. (about 1 mile).
Turn *right (North)* onto **Godown Rd**.
Drive approximately 0.5 mile, turn *left (West)* onto **West Case Rd.** Drive approximately 1.25 miles.

Just past OSU Airport (Don Scott Field, see below) and the fire department, turn *right* into the Aeronautical and Astronautical Research Laboratory (AARL) parking lot. Park in a visitor parking space. Gas Dynamics and Turbulence Laboratory (GDTL) and GTL are located within AARL. Room 100, the conference room, is located just inside the main entrance to the left.