

Traffic Flow Theory and Characteristics Committee (AHB45)
2014 Summer Meeting
August 11-13, 2014 - Portland, Oregon USA
Symposium Celebrating 50 Years of Traffic Flow Theory

SCHEDULE AT A GLANCE

as of August 4, 2014 and subject to change

Table with columns for dates August 10-14, 2014 and rows for times from 8:00 to 20:00. It details the schedule of technical sessions, breaks, lunches, and workshops.

Symposium Website

http://www.tft.pdx.edu/tft50/tft50.htm

Registration Site

http://noncredit.pdx.edu/search/publicCourseSearchDetails.do?method=addItemsToCart&cspIndex=39698544

Symposium Organizing Committee

Robert Bertini, Portland State University, Chair
Ludovic Leclercq, IFSTTAR / ENTPE
Nikolas Geroliminis, École Polytechnique Fédérale de Lausanne
Haizhong Wang, Oregon State University
Victor Knoop, Delft University of Technology

Vikash Gayah, The Pennsylvania State University
Yanfeng Ouyang, University of Illinois at Urbana-Champaign
Soyoung Ahn, University of Wisconsin
Tegan Enloe, DKS Associates
Miranda Wells, HDR

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DRAFT FINAL PROGRAM

as of August 4, 2014 and subject to change

Welcome Reception, 506 SW Mill St., 4th Floor

Sunday August 10, 2014 5:00-7:00 PM

Portland State University Urban Center 4th Floor Rooftop Terrace

- Remarks from Peter Koonce and Leah Treat (invited), City of Portland Bureau of Transportation

Registration 7:15-8:00

Session 1A – Opening Session, 2100 SW River Parkway, Ground Floor Willamette Room

Monday August 11, 2014 8:00-9:45

Moderator: Robert Bertini

- Welcome from Robert Bertini, Committee and Symposium Chair
- Remarks from Matthew Garrett, Director, Oregon Department of Transportation
- Remarks from Al Barkouli, Chairman and CEO, David Evans and Associates
- **Keynote Address: Reflections on 50 Years of the TRB Committee on Traffic Flow Theory and Characteristics, Prof. Nathan Gartner**
- Submitted remarks from Reinhard Kuhne

Break 9:45-10:15: Poster Session

Session 1B – Fundamental Diagram

Monday August 11, 2014 10:15-12:00

Moderator: Soyoung Ahn

- P6 - Capacity Drop: A Comparison Between Stop-and-Go Wave and Queue Congestion at Lane-Drop Bottleneck
K. Yuan, V. Knoop, S. Hoogendoorn
- P7 - Revisiting the Empirical Fundamental Relationship
B. Coifman

- P8 - Universalities in Fundamental Diagrams of Cars, Bicycles and Pedestrians
A. Seyfried, E. Andresen, M. Boltes, S. Hall, W. Mehner, A. Schadschneider, J. Zhang
- P14 - Human Factors in Fundamental Diagram
D. Ni, L. Li, H. Wang, C. Jia
- P26 - Automatic Fitting Procedure for the Fundamental Diagram
V. Knoop, W. Daamen

Lunch 12:00-1:15

Session 2A – Traffic flow models

Monday August 11, 2014 1:15-3:00

Moderator: Benjamin Coifman

- P18 - Accuracy of Pedestrian and Traffic Flow Models: Meaningful Quantifications
F. van Wageningen-Kessels, W. Daamen, S. Hoogendoorn
- P22 - Congestion Scenario-Based Vehicle Classification Detection Models Based on Traffic Flow Characteristics and Observed Event Data
H. Wei, Q. Ai, H. Liu, Z. Li, H. Wang
- P41 - Optimal Velocity Model with Dual Boundary Optimal Velocity Function
H. Wang
- P43 - Data Fusion Solution to Fix the Cumulative Drift Problem on Urban Arterials
H. Van Lint, R. Bertini, S. Hoogendoorn
- P46 - Modeling Acceleration Behavior in a Connected Environment
A. Talebpour, H. Mahmassani

Break 3:00-3:15: Poster Session

Session 2B – Traffic Control

Monday August 11, 2014 3:30-5:15

Moderator: Vikash Gayah

- **Keynote: Exploring the impact of microscopic features of traffic on macroscopic patterns, Vincenzo Punzo**
- P01 - Traffic Flow Theory Milestones in Developing the TEXAS Model for Intersection Traffic in the Early 1970s
T. Rioux
- P30 - VSL Control To Increase Discharge Rate At Incident Bottlenecks
D. Chen, S. Ahn
- P36 - A Real-Time Signal Control Strategy For Mitigating The Impact Of Bus Stops On Urban Arterials
C. Chavis, E. Christofa

Reception (Optional) at DKS Associates, 720 SW Washington St., Suite 500

Monday August 11, 2014 6:00-8:00 PM

[Register for reception here.](#)

Session 3A – Freeway traffic analysis

Tuesday August 12, 2014 8:00-9:45

Moderator: Victor Knoop

- **Keynote: Traffic Flow Theory in the Era of Autonomous Vehicles, Michael Zhang**
- P19 - A Mixture Model to Predict the Probability of Freeway Breakdown
P. Ossenbruggen, E. Laflamme
- P25 - Influential Subspaces of Connected Vehicles in Highway Traffic
K. Jerath, V. Gayah, S. Brennan
- P38 - The Heterogeneity Of Capacity Distribution Among Different Freeway Lanes
K. Xie, K. Ozbay, H. Yang

Break 9:45-10:15: Poster Session

Session 3B – Calibration

Tuesday August 12, 2014 10:15-12:00

Moderator: Haizhong Wang

- P10 – Validating California’s Freeway Incident Management Program
M. Mauch, A. Skabardonis, L. Davies
- P11 - Calibrating Multilane First-Order Traffic Flow Model With Endogenous Representation Of Lane-Flow Equilibrium
Y. Shiomi, T. Kozono
- P12 - Calibration Of Heterogeneous Nonlinear Car-Following Laws For Traffic Oscillation Prediction
C. Rhoades, X. Wang, Y. Ouyang
- P37 - Using Big Data and Efficient Methods to Capture Stochasticity for Calibration of Macroscopic Traffic Simulation Models
S. Mudigonda, K. Ozbay

Lunch 12:00-1:15

Session 4A – Empirical observations of traffic analysis

Tuesday August 12, 2014 1:15-3:00

Moderator: Hans van Lint

- P15 - Continuous Flow Metering Alternative Solution to Alleviate Congestion on Interstate 70 Eisenhower Tunnel
S. Marlina, B. Janson, S. Sobhi
- P29 - Measuring The Safety Impact Of Road Infrastructure Systems On Driver Behavior: Vehicle Instrumentation And Exploratory Analysis
S. Hamdar, J. Schorr
- *TBA*
- **Keynote: Theory of Pedestrian Flow, Serge Hoogendoorn**

Break 3:00-3:15: Poster Session

Session 4B – Network-wide modeling and control

Tuesday August 12, 2014 3:30-5:15

Moderator: Nathan Gartner

- P13 - Towards A Systematic Exploration Of The Influence Of Route / Choices On A Network Level Of Performance
C. Parzani, L. Leclercq, N. Benoumechiara, D. Villegas
- P31 - Macroscopic Relationship Between Network-Wide Traffic Emissions and Fundamental Properties of the Network
R. Shabihkhani, E. Gonzales
- P32 - Existence, Stability, And Mitigation Of Gridlock In Beltway Networks
W. Jin
- P44 - Effects Of Segregating Buses And Cars In A Congested, Non-Steady-State Street Network
N. Saade, W. Gu, M. Cassidy
- P45 - Stochastic Approximations For The Macroscopic Fundamental Diagram
J. Laval, F. Castrillion, Y. Zhou

Symposium Dinner at Oregon Historical Society, 1200 SW Park Ave

Tuesday August 12, 2014 6:00-9:00 PM

Session 5A – TFTC Committee and SimSub Business Meetings

Wednesday August 13, 2014 8:00-10:00

- **Keynote: 3D Trajectories and Their Role in Traffic Modeling and Simulation, Hani Mahmassani**
- TFTC Committee Meeting: Robert Bertini, Chair
 - Greenshields Prize Announcement
 - Subcommittee Reports
 - TRB Update
 - FHWA Report
 - Detailed Agenda to follow....
- SimSub Meeting: Mohammed Hadi, Leading

Break 9:45-10:15: Poster Session

Session 5B – Closing Session

Wednesday August 13, 2014 10:15-12:00

- Panel Discussion on the Future of Traffic Flow Theory
 - Robert Bertini
 - Hani Mahmassani
 - Nathan Gartner
 - Others...

Poster Presentations (presented during breaks in the program)

- P04 - Adapting Car Traffic Models and Concepts to Bicycle Traffic
A. Manar, G. Cao
- P09 - Stochastic traffic flow modeling for freeway traffic
B. Vachta, X. Qin, J. Kimn
- P16 - Investigation of Performance and Lane Utilization Within a Passing Lane on a Two Lane Rural Highway
Z. Freedman, A. Al-Kaisy
- P20 - On Oscillations in the Social Force Model
T. Kretz, K. Giese
- P24 - Urban Road Network Macroscopic Fundamental Diagram Analysis Under Vehicular Ad-Hoc Networks (VANETs) Environment
Z. Xu, P. Jin, B. Ran
- P28 - Real-Time Control Of Queue Spillbacks On Signalized Arterials
M. Ramezani, N. de Lamberterie, A. Skabardonis, N. Geroliminis
- P33 - Macroscopic Evaluation of Incident-Induced Driver Behavior Changes
Z. Rahman, S. Mattingly
- P34 – Current Validation of Traffic Models: Are They Correct for Uncertainty Analysis?
J. Casas, V. Punzo, J. Perarnau, M. Montanino
- P40 - A Time-Series Analysis of Highway Capacity: Case Study of Georgia 400
S. Dong, H. Wang, J. Li
- P42 - Collaborative Merging Behaviors and Their Impacts on Freeway Ramp Operations Under Connected Vehicle Environment: An Empirical Study
H. Zhang, Y. Xie, N. Gartner, T. Arsava
- P47 - A Second-Order Lagrangian Macroscopic Traffic Flow Model for Freeways
Z. Zhou, P. Mirchandani



U.S. Department of Transportation
Federal Highway Administration

FHWA Workshop

Integrated Architecture for linking the USDOT's Active Transportation Demand Management/ Dynamic Mobility Applications Testbed to FHWA's Predictive Engines

2100 SW River Parkway, Ground Floor Willamette Room

Wednesday August 13, 2014, 1:15-5:15 PM

Background

The USDOT's Dynamic Mobility Applications (DMA) Program focuses on exploiting new forms of data from wirelessly connected vehicles, travelers, and the infrastructure to enable transformative mobility applications. Their Active Transportation and Demand Management (ATDM) Program focuses its research efforts on accelerating the pace of dynamic control within transportation systems management through operational practices that incorporate predictive and active responses to changing operational conditions. These two programs are jointly sponsoring the development of multiple Analysis Modeling and Simulation (AMS) Testbeds to support the evaluation and demonstration of system-wide impacts of deploying DMA applications and ATDM strategies in a virtual testing environment. To truly implement Active Management we need to anticipate future conditions, and implement appropriate responses, otherwise the system is just reactive and responding to some breakdown, no matter how small. In order to exercise Active Management the FHWA Predictive Engines project will be leveraged to provide the testbed with five near term look ahead windows, to drive proactive responses.

As TMC operators and other transportation stakeholders exist in a paradigm where infrastructure improvements are costly and limitations on existing right-of-way further restrict the ability to complete capacity adding projects, stakeholders are often confined to the use of demand management and operational strategies to improve mobility. While TMCs set a goal of being proactive in managing traffic in their region, the reality is that most TMCs are operating with reactive management strategies in response to weather, incidents, and special events. Attend the workshop for a detailed discussion on Predictive TMC Operations Prototype framework that will address these challenges.

Objective

Share details about USDOT's work the AMS Testbed project and predictive engines, present predictive techniques prototype for TMC operations, present approaches to incorporating prediction capabilities into the AMS Testbed, familiarize with European research on predictive techniques, and seek input from the audience on challenges and opportunities with replicating the prediction approaches in an AMS testbed for real-time TMC operations.

Audience

TMC operators and managers, traffic engineers, transportation planners and researchers, developers and users of traffic models

Agenda

- 1:15 PM Introduction and opening remarks (James Colyar, FHWA)
- 1:30 PM Overview of AMS Testbed project (Ismail Zohdy, Booz Allen)
- 1:50 PM Group Discussion (Moderator: Ismail Zohdy, Booz Allen)
- 2:00 PM Approach to integrating prediction capabilities into AMS Testbed (Thomas Bauer, TTS)
- 2:20 PM Group Discussion (Moderator: Thomas Bauer, TTS)
- 2:50 PM *BREAK*
- 3:10 PM Overview of FHWA Predictive Techniques (Ram Jagannathan, Leidos)
- 3:30 PM Data needs and NEXTA framework for integrating prediction in AMS Testbed (Xuesong Zhou, ASU)
- 3:50 PM Group Discussion (Moderator: Ram Jagannathan, Leidos)
- 4:50 PM European experience on predictive techniques (Vincenzo Punzo, University of Napoli)
- 5:10 PM Closing remarks (James Colyar, FHWA)

ITE Simulation Roundtable Workshop

Thursday August 14, 2014 8:30-12:00

Location Portland State University Engineering Building Room 102 (1930 SW Fourth Ave)

Opening Remarks

8:30 a.m. Josh Anderson, DEA/Miranda Wells, HDR

Freeways

- 8:45 a.m. Data Driven Traffic Analysis and Modelling at NICTA (Glenn Geers)
- 9:15 a.m. HOT Toll Lanes – Volume and Model Development and Analysis (Roy Santanu, HDR)
- 9:45 a.m. CBOS – Cost Effective Freeway Solutions using VISSIM (Scott Harmon, DEA)

10:15 a.m. Break


Arterials

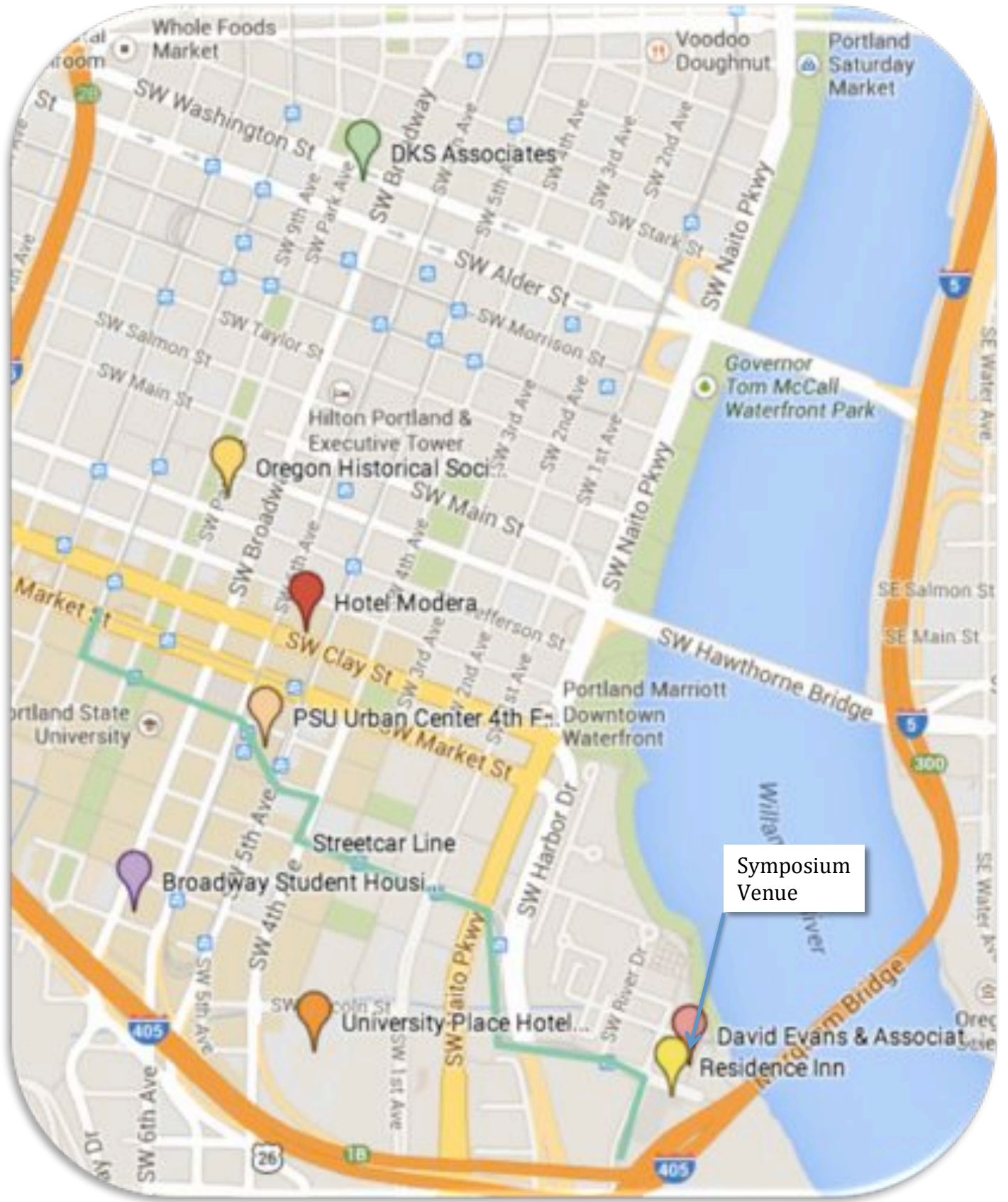
- 10:30 a.m. Analyzing/Designing Roundabouts – Deterministic Models and Simulation (Brian Walsh, WSDOT)
- 11:00 a.m. FHWA presentation (Contact: James Colyar, FHWA)

Closing Remarks

11:30 a.m. Ray Shank, WSDOT

SPECIAL THANKS TO:

- Pennie Isbell, TriMet  *Each participant is provided with a TriMet pass valid from August 10-14, 2014 for bus, streetcar, tram, or light rail transportation between symposium venues and the airport. Special thanks to TriMet for this support.*
- Ariel Lewis, Department of Civil and Environmental Engineering, PSU
- Renata Tirta, OTREC
- Josh Anderson, David Evans and Associates
- Rachel Stansbury and Yeruwelle de Rouen, Maseeh College of Engineering and Computer Science, PSU



Symposium
Venue