

Workshop Title: Modeling Uncertainties in Cooperative Automated Vehicles

Time and Location: Sunday January 13, 2019; Walter E. Washington Convention Center, 801 Mt Vernon PI NW, Washington, DC 20001.

Name and Code of Sponsoring Committee: Traffic Flow Theory and Characteristics (AHB45)

Moderator: John Halkias, Federal Highway Administration

Name and Code of Co-Sponsoring Committee:

1- Joint Simulation Sub-Committee: AHB45(1)

2- Sub-Committee on Traffic Flow Modeling for Connected and Automated Vehicles: AHB45(3)

Workshop Description:

Analysis, Modeling, and Simulation tools are an important component in determining the impact of the cooperative automated vehicle deployment. The deployment of cooperative automated vehicles (CAVs) will create opportunities and challenges for transportation system researchers and users that require transformative changes in simulation modeling algorithms, calibration and validation methods. These CAVs will create many uncertainties or concerns that simulation needs to model. How will these CAVs interact with other vehicles (human-driven vehicles) and moving objects such as pedestrians, bicycles, etc? How will the measurement errors from the numerous sensors (e.g., radar, lidar, GPS, etc.) affect the performance of these vehicles in both safety and mobility? What effect will the false positives and false negatives of object detection and position have on these CAVs? How will the dynamic temporal and special changes of the infrastructure affect the efficiency and effectiveness of these CAVs? How can we enable Analysis, Modeling and Simulation Tools to evaluate CAV applications and the uncertainties that will exist. To answer these questions, the Analysis, Modeling, and Simulation tools will need to be updated to reflect a traffic stream with mixed levels of emerging technologies—such as connectivity and automation—that affect both microscopic and macroscopic traffic characteristics. In addition, the various levels of uncertainties will need to be modeled to understand their impact on the safety and mobility performance.