



Committee on Traffic Flow Theory and Characteristics  
(TRB ACP50)

## ACC Webinar Series



We are proud to announce our 12nd webinar in the ACC Webinar Series:



### “Understanding mixed autonomy traffic flow: data collection, modeling, and control”

**Dr. Raphael Stern,**  
*Assistant Professor, University of Minnesota*

**Friday, Feb 25th, 2022 --- 10:00 AM (EDT)**

*(3 PM for London; 4 PM for Zurich, Paris, Rome, Amsterdam...; 11 PM for Beijing)*

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#### **ABSTRACT**

This work is motivated by the possibility of a small number of automated vehicles (AVs) or partially automated vehicles that may soon be present on our roadways, and the impacts they will have on traffic flow. This automation may take the form of fully autonomous vehicles without human intervention (SAE Level 5) or, as is already the case in many modern vehicles, may take the form of driver assist features such as adaptive cruise control (ACC) or other SAE Level 1 features. Regardless of the extent of automation, the introduction of such vehicles has the potential to substantially alter emergent properties of the flow while also providing new opportunities for traffic state estimation. In this talk, I present recent experimental and modeling work conducted to understand how ACC vehicles may be able to influence traffic flow, as well as work to detect whether individual vehicles in the flow have automation features based on their driving behavior, and explore how that may be leveraged for traffic control.

#### **BIOGRAPHY**

Raphael Stern is an Assistant Professor in the Department of Civil, Environmental, and Geo-Engineering at the University of Minnesota. Prior to joining UMN, Dr. Stern was a postdoctoral researcher in the Department of Informatics at the Technical University of Munich. Dr. Stern has also spent time as a visiting researcher at the Institute for Software Integrated Systems at Vanderbilt University. Dr. Stern received a bachelor of science degree (2013), master of science degree (2015), and Ph.D. (2018) all in Civil Engineering from the University of Illinois at Urbana-Champaign.