

*Student  
Seminar*

# *Pi Mu Epsilon*

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& GAMECOCK MATH CLUB

## A 'Crash' Course on the Mathematics of Traffic Flow

by Thomas Hamori, UofSC Graduate  
Student



Thomas Hamori

In this talk, I aim to give the audience a flavor of the mathematics of traffic flow. To do so, I will give a short introduction to the relevant components of the theory of differential equations. From here, I will show how one may use fluid dynamics to model traffic flow by comparing the flow of cars along a roadway to that of water in a stream. So called 'macroscopic' models are plagued by nonlinearity which causes 'wave-breaking' phenomenon, culminating in a traffic jam. Finally, I will describe some mechanisms by which mathematicians hope to overcome this problem, including some from my own research.

Bio: Thomas Hamori is a fourth year PhD student at the University of South Carolina. Before moving south, he earned his bachelor's degree in mathematics with a minor in philosophy from Purdue University. With the advisement of Dr. Changhui Tan, Tom studies partial differential equations (PDEs) through the framework of analysis. Specifically, he is interested in hyperbolic conservation laws for traffic flow.

Tuesday 25<sup>th</sup> October 2022 at 7pm  
Petigru 213

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