1143-60-496 **Alisa Knizel**, **Leo Petrov** and **Axel Saenz*** (ais6a@virginia.edu), Axel Saenz, 141 Cabell Drive, Kerchof Hall, P.O. Box 400137, Charlottesville, VA 22904. *Generalizations of TASEP in discrete and continuous inhomogeneous space.*

We investigate a rich new class of exactly solvable particle systems generalizing the Totally Asymmetric Simple Exclusion Process (TASEP). Our particle systems evolve in discrete or continuous space, and can be thought of as new exactly solvable examples of tandem queues, directed first- or last-passage percolation models, or Robinson-Schensted-Knuth type systems with random input. One of the features of the particle systems we consider is the presence of spatial inhomogeneity which can lead to formation of traffic jams.

For systems with special step-like initial data we find explicit limit shapes, describe their hydrodynamic evolution, and obtain asymptotic fluctuation results which put our generalized TASEPs into the Kardar-Parisi-Zhang universality class. At a critical scaling around a traffic jam in the continuous space TASEP we observe deformations of the Tracy-Widom distribution and the extended Airy kernel. A homogeneous version of our discrete space system is a one-parameter deformation of the geometric last-passage percolation, and we obtain a corresponding extension of the limit shape parabola from the seminal work of K. Johansson in 2000. (Received August 20, 2018)