Minicolloque n° MCPG 9 • **Oral** • **Poster**

Effect of social distancing on the dynamics of pedestrians

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In this talk, we will report experimental results [1] of the speed–density relation emerging in pedestrian dynamics when individuals keep a prescribed safety distance among them. To this end, we characterize the movement of a group of people roaming inside an enclosure varying different experimental parameters: (i) global density, (ii) prescribed walking speed, and (iii) suggested safety distance. Then, by means of the Voronoi diagram we are able to compute the local density associated to each pedestrian, which is afterward correlated with its corresponding velocity at each time. In this way, we discover a strong dependence of the speed–density relation on the experimental conditions, especially with the (prescribed) free speed. We also observe that when pedestrians walk slowly, the speed–density relation depends on the global macroscopic density of the system, and not only on the local one. Finally, we demonstrate that for the same experiment, each pedestrian follows a distinct behavior, thus giving rise to multiple speed–density curves.

[1] Echeverría-Huarte, I., Garcimartín, A., Parisi, D. R., Hidalgo, R. C., Martín-Gómez, C., & Zuriguel, I. (2021). Effect of physical distancing on the speed–density relation in pedestrian dynamics. *Journal of Statistical Mechanics: Theory and Experiment*, *2021*(4), 043401.