

List of publications

Pierre Illien

- [42] P. Illien, R. Golestanian, *Chemotactic particles as strong electrolytes: Debye-Hückel approximation and effective mobility law*. *J. Chem. Phys.* **160**, 154901 (2024). [arXiv:2402.09775](#).
- [41] A. Grabsch, T. Berlioz, P. Rizkallah, P. Illien, O. Bénichou, *Universal correlation profiles in single-file systems*. *Phys. Rev. Lett.* **132**, 037102 (2024). [arXiv:2306.13516](#).
- [40] J. Decayeux, V. Dahirel, M. Jardat, P. Illien, *Isotropic active colloids: explicit vs. implicit descriptions of propulsion mechanisms*. *Soft Matter* **19**, 8997 (2023). [arXiv:2309.08455](#).
- [39] A. Benois, M. Jardat, V. Dahirel, V. Démery, J. Agudo-Canalejo, R. Golestanian, P. Illien, *Enhanced diffusion of tracer particles in non-reciprocal mixtures*. *Phys. Rev. E* **108**, 054606 (2023). [arXiv:2307.05408](#).
- [38] O. Bernard, M. Jardat, B. Rotenberg, P. Illien, *On analytical theories for conductivity and self-diffusion in concentrated electrolytes*. *J. Chem. Phys.* **159**, 164105 (2023). [arXiv:2306.16737](#).
- [37] P. Rizkallah, A. Sarracino, O. Bénichou, P. Illien, *Absolute negative mobility of an active tracer in a crowded environment*. *Phys. Rev. Lett.* **130**, 218201 (2023). Editors' suggestion. [arXiv:2212.01216](#).
- [36] A. Grabsch, P. Rizkallah, A. Poncet, P. Illien, O. Bénichou, *Exact spatial correlations in single-file diffusion*. *Phys. Rev. E* **107**, 044131 (2023). [arXiv:2302.02929](#).
- [35] A. Grabsch, P. Rizkallah, P. Illien, O. Bénichou, *Driven tracer in the Symmetric Exclusion Process: linear response and beyond*. *Phys. Rev. Lett.* **130**, 020402 (2023). [arXiv:2207.13079](#).
- [34] P. Rizkallah, A. Grabsch, P. Illien, O. Bénichou, *Duality in single-file diffusion*. *J. Stat. Mech.* **013202** (2023). [arXiv:2207.07549](#).
- [33] M. Jardat, V. Dahirel, P. Illien, *Diffusion of a tracer in a dense mixture of soft particles connected to different thermostats*. *Phys. Rev. E* **106**, 064608 (2022). [arXiv:2209.00929](#).
- [32] J. Decayeux, M. Jardat, P. Illien, V. Dahirel, *Conditions for the propulsion of a colloid surrounded by a mesoscale phase separation*. *Eur. Phys. J. E* **45**, 96 (2022). [arXiv:2212.03153](#).
- [31] A. Grabsch, A. Poncet, O. Bénichou, P. Illien, *Exact time dependence of the cumulants of a tracer position in a dense lattice gas*. *Phys. Rev. E* **105**, 054139 (2022). [arXiv:2202.09278](#).
- [30] A. Grabsch, A. Poncet, P. Rizkallah, P. Illien, O. Bénichou, *Exact closure and solution for spatial correlations in single-file diffusion*. *Science Advances* **8**, eabm5043 (2022). [arXiv:2110.09269](#).
- [29] J. Agudo-Canalejo, P. Illien, R. Golestanian, *Comment on "Relative Diffusivities of Bound and Unbound Protein Can Control Chemotactic Directionality"*. *Langmuir* **38**, 2746 (2022). [arXiv:2110.12797](#).
- [28] P. Rizkallah, A. Sarracino, O. Bénichou, P. Illien, *Microscopic theory for the diffusion of an active particle in a crowded environment*, *Phys. Rev. Lett.* **128**, 038001 (2022). [arXiv:2112.07312](#).

- [27] A. Poncet, A. Grabsch, P. Illien, O. Bénichou, *Generalised correlation profiles in single-file systems*, *Phys. Rev. Lett.* **127**, 220601 (2021). [arXiv:2103.13083](#).
- [26] J. Agudo-Canalejo, T. Adeleke-Larodo, P. Illien, R. Golestanian, *Synchronization and enhanced catalysis of mechanically coupled enzymes*, *Phys. Rev. Lett.* **127**, 208103 (2021). [arXiv:2105.10215](#).
- [25] J. Decayeux, V. Dahirel, M. Jardat, P. Illien, *Spontaneous propulsion of an isotropic colloid in a phase-separating environment*, *Phys. Rev. E* **104**, 034602 (2021). [arXiv:2103.13244](#).
- [24] A. Poncet, O. Bénichou, P. Illien, *Cumulant generating functions of a tracer in quenched dense symmetric exclusion processes*, *Phys. Rev. E* **103**, L040103 (2021). [arXiv:2012.06490](#).
- [23] J. Agudo-Canalejo, P. Illien, R. Golestanian, *Cooperatively enhanced reactivity and 'stabilitaxis' of dissociating oligomeric proteins*, *PNAS* **117**, 11894 (2020). [arXiv:1911.02350](#).
- [22] P. Illien, C. de Blois, Y. Liu, M. N. van der Linden, O. Dauchot, *Speed-dispersion-induced alignment: A one-dimensional model inspired by swimming droplets experiments*, *Phys. Rev. E* **101**, 040602 (2020). [arXiv:1910.00525](#).
- [21] A. I. Campbell, S. J. Ebbens, P. Illien, R. Golestanian, *Experimental observation of flow fields around active Janus spheres*, *Nature Comm.* **10**, 3952 (2019). [arXiv:1802.04600](#).
- [20] T. Adeleke-Larodo, P. Illien, R. Golestanian, *Fluctuation-induced hydrodynamic coupling in an asymmetric, anisotropic dumbbell*, *Eur. Phys. J. E.* **42**, 39 (2019). [arXiv:1712.06418](#).
- [19] T. Bertrand, P. Illien, O. Bénichou, R. Voituriez, *Dynamics of run-and-tumble particles in dense single-file systems*, *New J. Phys.* **20**, 113045 (2018). [arXiv:1807.03993](#).
- [18] O. Bénichou, P. Illien, G. Oshanin, A. Sarracino, R. Voituriez, *Tracer diffusion in crowded narrow channels. Topical review*, *J. Phys.: Condens. Matter* **30**, 443001 (2018). [arXiv:1809.05010](#).
- [17] J. Agudo-Canalejo, T. Adeleke-Larodo, P. Illien, R. Golestanian, *Enhanced diffusion and chemotaxis at the nanoscale*, *Accounts Chem. Res.* **51**, 2365 (2018).
- [16] P. Illien, O. Bénichou, G. Oshanin, A. Sarracino, R. Voituriez, *Nonequilibrium fluctuations and enhanced diffusion of a driven particle in a dense environment*, *Phys. Rev. Lett.* **120**, 200606 (2018). [arXiv:1709.01767](#).
- [15] J. Agudo-Canalejo, P. Illien, R. Golestanian, *Phoresis and enhanced diffusion compete in enzyme chemotaxis*, *Nano Lett.* **18**, 2711 (2018).
- [14] P. Illien, T. Adeleke-Larodo, R. Golestanian, *Diffusion of an enzyme: the role of fluctuation-induced hydrodynamic coupling*, *Europhys. Lett.* **119**, 40002 (2017).
- [13] P. Illien, X. Zhao, K. K. Dey, P. J. Butler, A. Sen, R. Golestanian, *Exothermicity is not a necessary condition for enhanced diffusion of enzymes*, *Nano Lett.* **17**, 4415 (2017).
- [12] P. Illien, R. Golestanian, A. Sen, *'Fuelled' motion: phoretic motility and collective behaviour of active colloids*, *Chem. Soc. Rev.* **46**, 5508 (2017).
- [11] P. Illien, O. Bénichou, *Propagators of random walks on comb lattices of arbitrary dimension*, *J. Phys. A: Math. Theor.* **49**, 265001 (2016). [arXiv:1602:03477](#).

-
- [10] O. Bénichou, P. Illien, G. Oshanin, A. Sarracino, R. Voituriez, *Nonlinear response and emerging nonequilibrium micro-structures for biased diffusion in confined crowded environments*, *Phys. Rev. E* **93**, 032128 (2016). [arXiv:1510.09133](#).
- [9] O. Bénichou, P. Illien, G. Oshanin, A. Sarracino, R. Voituriez, *Diffusion and subdiffusion of interacting particles on comb-like structures*, *Phys. Rev. Lett.* **115**, 220601 (2015). [arXiv:1507.00539](#).
- [8] P. Illien, O. Bénichou, G. Oshanin, R. Voituriez *Distribution of the position of a driven tracer in a hardcore lattice gas*, *J. Stat. Mech.*, P11016 (2015). [arXiv:1507.00484](#).
- [7] O. Bénichou, P. Illien, G. Oshanin, A. Sarracino, R. Voituriez, *Microscopic theory for negative differential mobility in crowded environments*, *Phys. Rev. Lett.* **113**, 268002 (2014). [arXiv:1412.0956](#).
- [6] P. Illien, O. Bénichou, G. Oshanin, R. Voituriez, *Velocity anomaly of a driven tracer in a confined crowded environment*, *Phys. Rev. Lett.* **113**, 030603 (2014).
- [5] O. Bénichou, A. Bodrova, D. Chakraborty, P. Illien, A. Law, C. Mejia-Monasterio, G. Oshanin, R. Voituriez, *Geometry-induced superdiffusion in driven crowded systems*, *Phys. Rev. Lett.* **111**, 260601 (2013). [arXiv:1310.8237](#).
- [4] P. Illien, O. Bénichou, C. Mejia-Monasterio, G. Oshanin, R. Voituriez, *Active transport in dense diffusive single-file systems*, *Phys. Rev. Lett.* **111**, 038102 (2013). [arXiv:1303.2930](#).
- [3] O. Bénichou, P. Illien, C. Mejia-Monasterio, G. Oshanin, *A biased intruder in a dense quiescent medium: looking beyond the force-velocity relation*, *J. Stat. Mech.*, P05008 (2013).
- [2] O. Bénichou, P. Illien, G. Oshanin, R. Voituriez *Fluctuations and correlations of a driven tracer in a hardcore lattice gas*, *Phys. Rev. E* **87**, 032164 (2013). [arXiv:1304.2230](#).
- [1] D. Pihler-Puzovic, P. Illien, M. Heil, A. Juel, *Suppression of complex fingerlike patterns at the interface between air and a viscous fluid by elastic membranes*, *Phys. Rev. Lett.* **108**, 074502 (2012). Editor's suggestion.