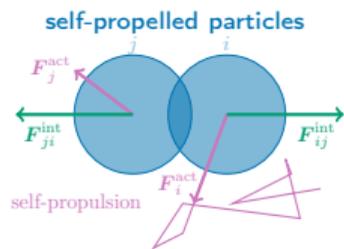
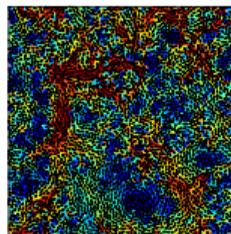
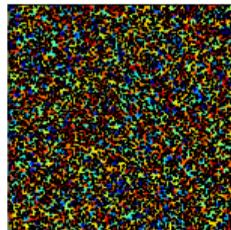


# How do dense active systems flow and organise?

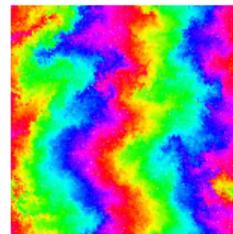


$\tau_p \ll 1$   
 $\tau_p \gg 1$

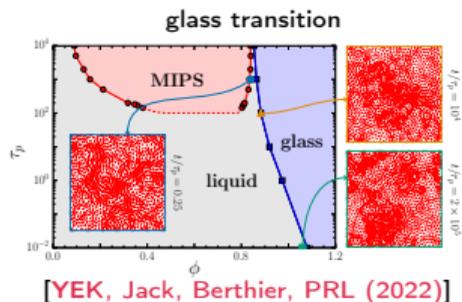
velocity correlations



[YEK, Klamser, et al., PRL (2024)]

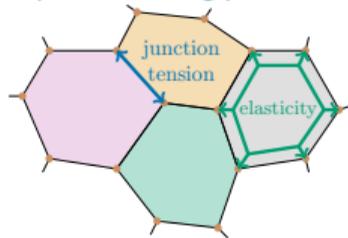


active turbulence  
epithelial fingers

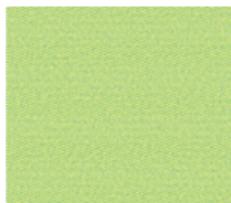


[Kammeraat, YEK, et al., arXiv (2025)]

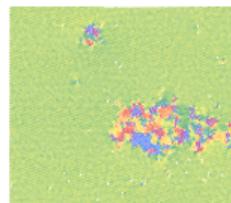
pair-fluctuating particles



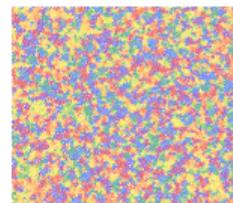
long-range order & hyperuniformity [YEK, Henkes, Soft Matter (2025)]



low noise



intermediate noise



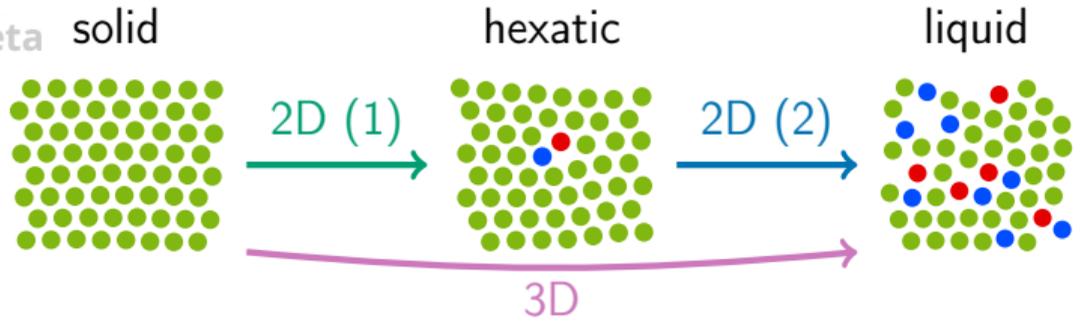
high noise



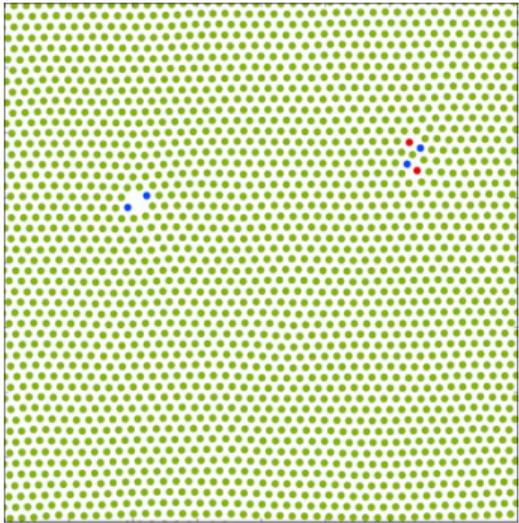


Y.-E. Keta

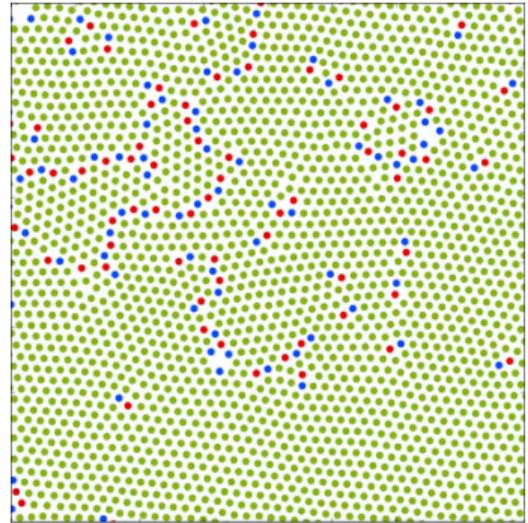
# How are collective motion and melting mechanisms linked?



KTHNY theory  
(equilibrium)

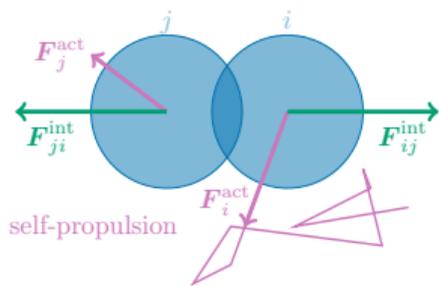


solid

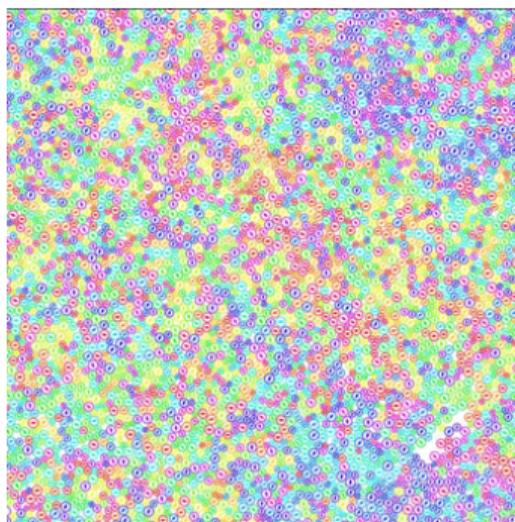
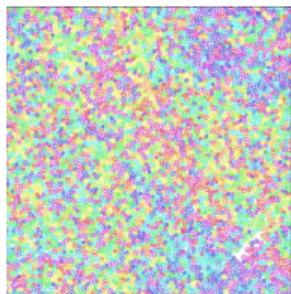


hexatic

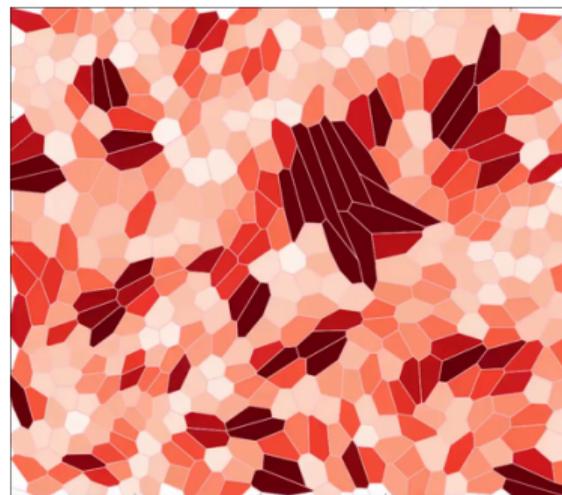
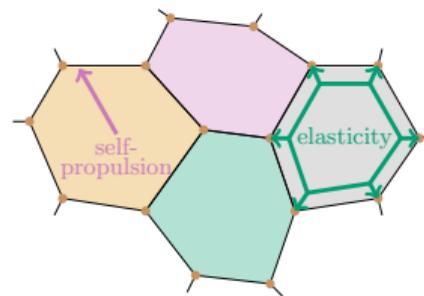
# How may the turbulent flow of active fluids generate alignment?



initial  $t$



persistence  
polar alignment



persistence + deformability  
nematic alignment

final  $t$