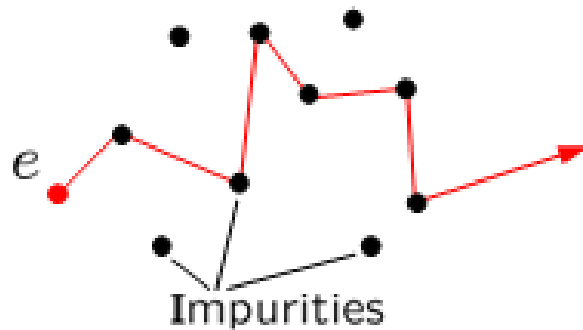


# Memory-based localization of a classical wave-particle object in a disordered and periodic medium

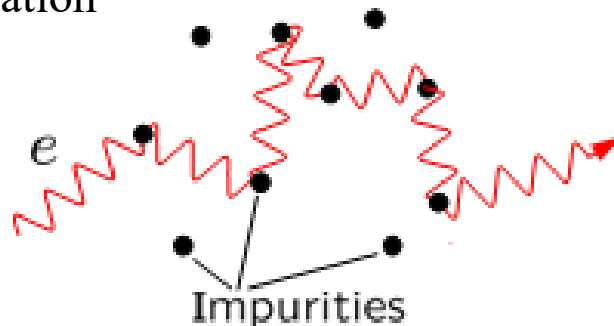
Z. Herson, S. Hidalgo Caballero, Y. Couder and E. Fort

**Quantum wave-particle duality**  
**Electrons in disordered medium**

High  $T$ , particle nature dominates  
Brownian motion

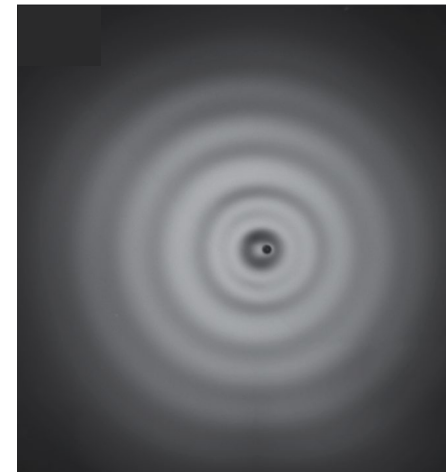


Low  $T$ , wave nature dominates  
Localisation



**Classical memory-based duality**  
**Walkers (self-propelled bouncing droplets)**

Low memory  
Small wave extension  
Particle nature dominates

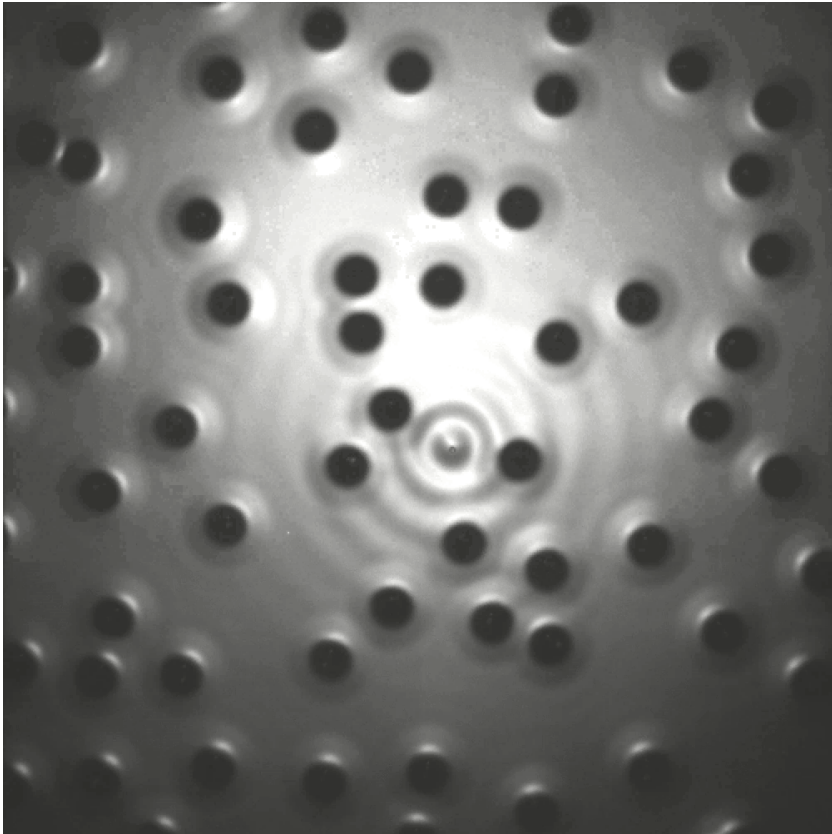


High memory  
Extended wave  
Wave nature dominates



## Walkers propagating in a disordered medium

Low memory



High memory

