

Information engines with self-propelling particles

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Information engines, setups that use measurements to extract additional work from a system, serve as examples for the deep connections between thermodynamics and information theory. In most studies the particles inside the engine are assumed to perform Brownian motion. In recent years much interest was devoted to the study of active matter, consisting of internally driven particles. How does the conversion of information to work changes when the particles inside the engine are active? We find qualitative differences between information engines with thermal and active particles. These turn out to originate from the tendency of active particles to bunch at boundaries. We further discuss the possible role of inelastic collisions in such systems, finding how they affect the pressure due to repeated collisions with the walls.