

# Pairing dynamics far from equilibrium

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Superfluidity and superconductivity are remarkable manifestations of quantum coherence at a macroscopic scale. The existence of superfluidity has been experimentally confirmed in many condensed matter systems, in  $^3\text{He}$  and  $^4\text{He}$  liquids, in nuclear systems including nuclei and neutron stars, in both fermionic and bosonic cold atoms in traps, and it is also predicted to show up in dense quark matter. Pairing correlations in nuclear systems are one of the best known characteristics of non magic atomic nuclei. Various features related to high spin phenomena or to large amplitude collective motion, e.g. fission, indicate that these correlations are crucial for our understanding of nuclear structure and dynamics. I will present certain aspects of superfluidity in nonequilibrium conditions, which originate from dynamics of the order parameter. The examples of phenomena predicted in nuclear collisions and their analogues in cold atomic systems will be presented.