Invited Talk 11

Nonlinearity Mediated Atomtronics and Quantum Precision Measurements

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I will focus on experimentally feasible schemes to achieve precision measurements with ultracold atoms and other quantum systems. The nonlinearity and the atomtronics circuit geometry play vital roles for obtaining the desired system dynamics. Atom-interferometry for the engineered elliptical atomtronics will be reported where a controlled interference patterns are generated. I will also talk about a nonlinearity-induced and fractional revivals-driven miscibility dynamics of quasi-2D mass-imbalanced binary Bose-Einstein condensates for circular atomtronics. The difference of the characteristic time scales of Rb-isotopes leads to near perfect separation for appropriate parameters. I will also mention the precision measurements for systems governed by nonlinear energy spectrum upon photon addition and the concept of quantum scissor.

References

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