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**Entanglement dynamics in itinerant fermionic and bosonic systems**<sup>1</sup> DURGANANDINI PILLARISHETTY, Department of Physics, S. P. Pune University, Pune 411 007, India — The concept of quantum entanglement of identical particles is fundamental in a wide variety of quantum information contexts involving composite quantum systems. However, the role played by particle indistinguishability in entanglement determination is being still debated. In this work, we study, theoretically, the entanglement dynamics in some itinerant bosonic and fermionic systems. We show that the dynamical behaviour of particle entanglement and spatial or mode entanglement are in general different. We also discuss the effect of fermionic and bosonic statistics on the dynamical behaviour. We suggest that the different dynamical behaviour can be used to distinguish between particle and mode entanglement in identical particle systems and discuss possible experimental realizations for such studies.

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