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Femtoscopy at LHC: Lessons, Open Questions and Future

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Femtoscopy has been a crucial element of the physics programme at the LHC in Run1 and Run2. Identical meson measurements have shown that we understand in detail various aspects of the collision dynamics in heavy ion collisions. In contrast, detailed results in pp collision still await proper explanation. Similarly non-identical particle femtoscopy results turned out to be sensitive to the duration of the hadronic rescattering phase, giving and independent cross-check of the system evolution description.

In parallel femtoscopic measurements for baryons, especially ones including strangeness, as well as antibatyons provide a qualitatively new way to access parameters of the strong interaction between exotic and regular nuclear matter. These appear to be especially important in modelling of neutron star composition and mergers. This study stands to benefit a lot from significantly extended data collection capabilities in LHC Run3.

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