

Bubbletrons

Thursday 13 April 2023 09:57 (22 minutes)

I will show how first order phase transitions (PT) in the early universe, with relativistic bubble walls, constitute particle accelerators and colliders. These 'bubbletrons' offer novel opportunities of observational access to very high energy scales, in addition to the gravitational waves from the PT. As two examples, I will discuss: i) non-adiabatic production of dark matter which is so fast to leave an imprint in the matter power spectrum, for dark matter masses of 10^8 - 10^9 GeV and a weak-scale PT; ii) production of relics beyond the GUT scale without the need for the universe to ever reach those temperatures.

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