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Solitons as the early stage of quasicondensate formation during evaporative cooling PIOTR DEUAR, EMILIA WITKOWSKA, MARIUSZ GAJDA, Institute of Physics, Polish Academy of Sciences, KAZIMIERZ RZAZEWSKI, Center for Theoretical Physics, Polish Academy of Sciences — The evaporative cooling dynamics of trapped one-dimensional Bose-Einstein condensates was simulated using the classical fields method. BECs and quasicondensates were obtained in the final equilibrium state, and we were able to track the onset of condensation. It was confirmed that solitons are created during the evaporation process by the Kibble-Zurek mechanism, but eventually dissipate during thermalisation. This bridges the gap between the phase defect picture of the Kibble-Zurek mechanism and the long-wavelength phase fluctuations picture in the thermal state. Interestingly, a signature of the initial defects remains in the final equilibrium state: the phase coherence length is approximately conserved during soliton dissipation.

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