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On the survival of strong nuggets in the early Universe

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Strong nuggets with a baryon number of A=10^10-10^30 could be able to survive from the cosmic separation of the QCD phases, provided the transition from strange quark matter to strangeon matter is accounted for, thereby evading evaporation in the early Universe. Such strangeon nuggets may serve as a dark matter candidate within particle standard model. We formulate the corresponding phase transition of cosmic strange matter, establishing a parameter space which reasonably accommodates observational constraints on the dark-to-luminous matter ratio and the mass-radius relation, as well as tidal deformability of compact objects.

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