

Alexander Kusenko: PBH production via scalar field fragmentation

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I will discuss a novel class of scenarios for PBH formation, which do not place any particular requirements on inflation. A scalar field with a relatively small mass can develop a large VEV during inflation. Relaxation of such a field after inflation can result in fragmentation via a well-known instability, with formation of matter in the form of scalar lumps or Q-balls. If this kind of matter comes to dominate the energy density temporarily, until the lumps decay, then PBH can form from the relatively large fluctuations associated with the small number of “particles” per volume.