KMI Colloquium

" Cosmology of the Higgs Field "



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Abstract:

It is now widely believed that our Universe experienced inflationary expansion in the early stage when fluctuations that seeded the observed large-scale structure were generated quantum mechanically. During this epoch the Higgs field in the standard model also acquired quantum fluctuations. We discuss its cosmological consequences. In the most dramatic case, the Higgs field would exhibit a run-away behavior to cause instability of the Universe. Even if this was not the case, long-wave fluctuations produce Higgs condensation in general, which may generate too large curvature fluctuations in some types of inflation models. Finally we also discuss the possibility that the Higgs field itself induced inflation in the early Universe in the context of the generalized G inflation.

