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An inflationary probe of cosmic Higgs switching

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While the Higgs mass is fixed today, it is possible that the Higgs mass is dynamical and varied with time in the early Universe. In particular, there is an intriguing possibility that if the Higgs field couples to some oscillating scalar (e.g., a modulus) in the early Universe, the Higgs oscillated between symmetry preserving and broken phases. I will discuss one possible cosmological (inflationary) probe of this type of phase oscillation. If the Higgs couples to the inflaton, the phase oscillations could imprint on the primordial spectrum, resulting in novel “k-wavepacket” features. I will explain the origin of the wavepacket feature and briefly discuss a potential observable through measuring fine structures in the CMB temperature spectrum.

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