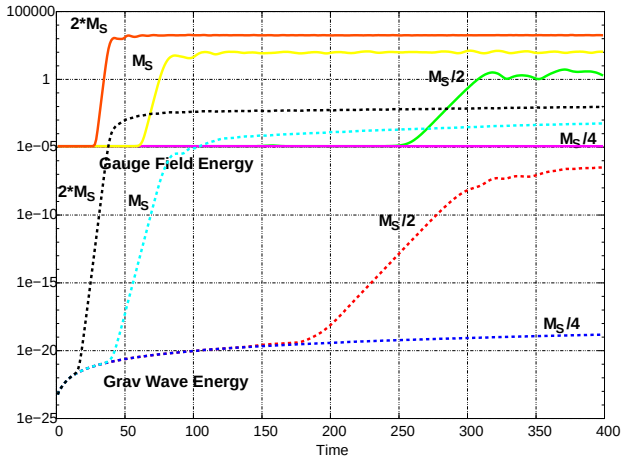

FIG. 19: Different colors show how the gravitational wave energy and gauge field energy grow for different values of the tachyonic mass.

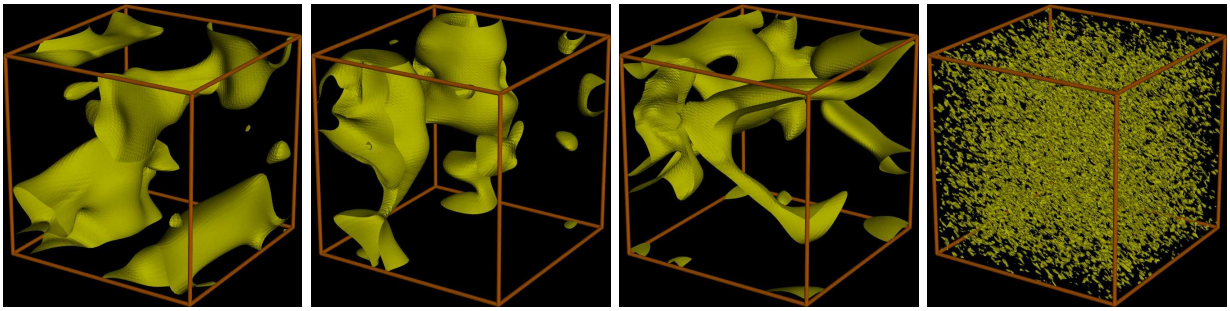

FIG. 20: Snap-shots of iso-surface of the energy density for gauge field, gravity waves, tachyon and the inflaton (from left-to-right) at a particular instant of time, $t = 300$. The plots are taken from [727].

8. SM Higgs preheating

On particular realistic example of preheating [124, 608] can be illustrated by the SM Higgs inflation [86]. After inflation the Higgs field evolves in time, $h = h(\chi(t))$, see Eq. (215), so the effective masses of the fermions and of the gauge bosons also obtain time dependence.

$$m_W = m_Z \cos\theta_W = \frac{1}{2} g_2 h(\chi(t))\,, \qquad m_f = \frac{1}{2} y_f\, h(\chi(t))\,, \tag{410}$$

where θ_W is the Weinberg angle $\theta_W = \tan^{-1}(g_1/g_2)$, and y_f, g_1 and g_2 are the Yukawa and the $U(1)_Y$ and $SU(2)_L$ couplings, respectively. The time dependent Higgs VEV spontaneously breaks the gauge symmetry, and give masses to W and Z gauge bosons masses. The relevant