Read-me for plots in 'param_28_31_32_33_compare'

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These plots are to compare the effects of translating ΔV in the ϕ direction. Each plot compares several runs with the same initial conditions and uses a ΔV that differs only in the choice of ϕ_p.

The idea was to try to distinguish between the behaviour when sub-horizon fluctuations are and are not present. Two main difficulties in comparing between runs are:

- Since the width of ΔV is dependent on ϕ, changing ϕ_p will change the amount of time for which the instability will act (since $\dot{\phi}$ is not constant). This means the amount of growth experienced by a χ fluctuation depends indirectly on the choice of ϕ_p.
- Changing the ϕ_p allow the initial fluctuations to evolve for a different amount of time, so comparing between runs on a per trajectory basis is not straight forward.

- **potential**
  This plot shows the potentials being considered in the rest of the plots. ΔV differs only in the choice of ϕ_p.
- **horizon**
  This plot compares the horizon to lattice spacing, vertical lines show the location of ΔV.
- **sampled_trajectories_phidot_wdv**
  This plot shows $\dot{\phi}$ for the different choices of ϕ_p. The bump after the vertical blue line is related to $|V_{,\phi}|$ decreasing by differing amounts along different trajectories due to the χ dependence of $\Delta V_{,\phi}$.
- **sampled_trajectories_phidot_dif**
  Similar to the above plot, but with the $\Delta V = 0$ contribution subtracted off. I think the shape of these plots is what would be expected from the slow-roll approximation and the shape of $V_{,\phi}$, as the shape of $V_{,\phi}$ goes from negative to positive when $\phi > \phi_p + b$ where b is the standard deviation of the Gaussian envelope of ΔV.

- **sampled_trajectories_chi_wodv**

  This plot shows $\chi_{\Delta V=0}$ with vertical lines showing the location of ΔV. In the top subplot ΔV before the initial χ fluctuations have frozen, while in the bottom subplot ΔV acts at as the initial χ fluctuations are freezing.

- **sampled_trajectories_chi_dif**

  Comparing between the subplots there are two obvious differences: the overall amplitude, and the shape of the tail at low ϕ. I think the change in overall amplitude is due to different values of $\dot{\phi}$. For the top subplot initial conditions are after ΔV has started to turn on, so the magnitude of the χ fluctuations is smaller than it otherwise would be. In the top subplot (ΔV before the initial χ fluctuations have frozen) the trajectories do not spread in the tail, whereas in the other three subplots trajectories show various amounts of fanning out. Given these plots I can't tell if the spreading of the tail is a function of the overall amplitude of the χ fluctuations or something to do with where ΔV is applied.

- **sampled_trajectories_zeta_wdv**

  This plot shows ζ as calculated along a sample of trajectories. In the top subplot, the magnitude of ζ due the χ fluctuations put in at initial condition is of the same order as ζ generated by ΔV (compare to 'sampled_trajectories_zeta_dif'). In the other three subplots ζ generated by ΔV is the dominant effect. My guess is the difference in the magnitude of ζ between the different subplots is due to the difference in magnitude of χ fluctuations between the different ΔV's.

- **mean_zeta_wdv**

  This plot is of ζ averaged over the lattice. The step is more abrupt for the subplots where ΔV is applied earlier, I'm not sure why this is.