Read-me for plots in param_29_30_21_compare

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These plots compare three runs with the same seed, but different ΔV. The three ΔV's compared are labeled on the plots as:

- **narrow** ΔV Uses the same ΔV parameters as the previous plots in the 'parameter11_plots' folder.
- **wide** ΔV Uses parameters which double the width of the Gaussian envelope used for ΔV. The overall amplitude of ΔV is set so that the spread of χ trajectories is comparable to those caused by 'narrow ΔV'.
- **wide, skewed** ΔV Uses the same width of Gaussian envelope as 'wide ΔV', but moves the Gaussian off centre with respect to ϕ_p (the net effect is to increase the time $V_{\chi,\chi} > 0$).

For plots using $\Delta V = 0$ there is no difference between the trajectories on the three subplots.

- **potential_surface**
  This plot shows surface plots for the three potentials compared in the rest of the plots. In order to make the shape of the potential easier to see, the domain in the χ direction is a factor of a few larger than the fluctuations in χ caused by ΔV.
- **sampled_trajectories_chi_wodv**
  This plot shows sampled trajectories of $\chi_{\Delta V=0}$ vertical lies show the region over which ΔV will act. One thing to notice is for 'wide ΔV' and 'wide, skewed ΔV' the initial χ fluctuations have not frozen-out when ΔV begins to act (the same thing is visible in 'sampled_trajectories_chidot_wodv').
- **sampled_trajectories_chi_wdv**
  This plot shows sampled trajectories of $\chi_{\Delta V}$. I think these plots show that increasing the width of ΔV results in more tightly bundled trajectories of χ after ΔV. 'wide, skewed ΔV' does damp more quickly than 'wide ΔV', but the effect size is less than a factor of 2 for the parameters tested.

- **sampled_trajectories_zeta_dif**

  This plot shows the difference in ζ calculated along individual trajectories with/without ΔV. The thing that I notice about these plots is 'wide ΔV' and 'wide, skewed ΔV' contain trajectories that do not change monotonically (this might also just be an effect of the monotomic trajectories having smaller amplitudes, while the non-monotomic trajectories maintain their amplitude). This might relate to χ trajectories having not frozen-out when ΔV acts. In the folder 'parameter28(sub-supHorizon)_plots' the same effect can be seen in 'sampled_trajectories_zeta_dif.png' for the subhorizon subplot. Another difference is that 'narrow ΔV' wider spread of ζ trajectories (at least some of this increased spread is likely attributable to the larger effect on the χ trajectories caused by 'narrow ΔV').

- **sampled_trajectories_zeta_wdv**

  This plot shows ζ calculated along sampled trajectories. The thing that stands out in this plot is the difference in scale between the subplots.

- **mean_zeta_wdv**

  This plot shows ζ as calculated by averaging dζ over the box. The mean ζ for all three potentials have similar magnitudes. Both the 'wide ΔV' and 'wide, skewed ΔV' level off more quickly than 'narrow ΔV'.

- **sampled_trajectories_phidot_dif**

  This plot shows the difference $\dot{\phi}_{\Delta V} - \dot{\phi}_{\Delta V=0}$. The scales on the three subplots are different with 'wide ΔV' having the smallest peak difference and 'narrow ΔV' the largest. I think this is what is expected from slow-roll, since $\Delta V_{narrow,\phi}$ has the largest maximum and $\Delta V_{wide,\phi}$ has the smallest maximum.

- **sampled_trajectories_hub_dif**

  In this plot H_{local} is H as calculated along a trajectory from the Friedmann equation ignoring gradient terms, H_{global} is H as output from the lattice calculation. This plot shows $ln(H_{local}/H_{global})$ vs ϕ and χ. I've reduced the number of trajectories to three to make the plot more legible. Looking at the χ, $ln(H_{local}/H_{global}$ projection, the growth in $ln(H_{local}/H_{global}$ is steepest at the extremes of χ (where ΔV is largest) and nearly flat away from the extremes of χ (where $\dot{\chi}$ is largest), I interpret this to mean $ln(H_{local}/H_{global})$ is dominated by ΔV and $\dot{\chi}$ is subdominant. The size of the effect is $\mathcal{O}(10^-3)$.