

# Constant-roll inflation

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We consider an inflationary scenario where the rate of inflaton roll defined by  $\ddot{\phi}/(\dot{H}\dot{\phi})$  remains constant. The rate of roll is small for slow-roll inflation, while a generic rate of roll leads to the interesting case of "constant-roll" inflation. We find a general exact solution for the inflaton potential required for such inflaton behaviour. In this model, due to non-slow evolution of background, the would-be decaying mode of linear scalar (curvature) perturbations may not be neglected. It can even grow for some values of the model parameter, while the other mode always remains constant. However, this always occurs for unstable solutions which are not attractors for the given potential. The most interesting particular cases of constant-roll inflation remaining viable with the most recent observational data are quadratic hilltop inflation (with cutoff) and natural inflation (with an additional negative cosmological constant). In these cases even-order slow-roll parameters approach non-negligible constants while the odd ones are asymptotically vanishing in the quasi-de Sitter regime.

## References:

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