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Multi-point propagator approach to inflationary correlators

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A key step in the comparison between inflationary predictions and cosmological observations resides in the computation of primordial correlators.
Numerical methods have been developed, which allow to overcome some of the difficulties arising in analytical calculations when the models considered are complex.
The \texttt{PyTransport} package, which implements the transport formalism, allows computation of the tree-level 2- and 3-point correlation functions for multi-field models, with arbitrary potentials and curved field space.
In this work we investigate an alternative numerical implementation of the transport approach, based on the use of transfer "matrices" called \textit{multi-point propagators} (MPP).
We test the novel MPP method, and extensively compare it with the traditional implementation of the transport approach provided in \texttt{PyTransport}.
We highlight advantages of the former, discussing its performance as a function of the number of sub-horizon e-folds of evolution and tolerance settings.
For topical ultra-slow-roll models of inflation we show that MPPs (i) precisely track the decay of correlators when \texttt{PyTransport} fails, (ii) extend the computation of squeezed bispectra for squeezing values at least one decade beyond those attainable with \texttt{PyTransport}.

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