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Analyticity of the wavefunction of the universe

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In recent years there has been an increasing interest in the interplay between amplitudes and cosmological correlators, in particular in the use of amplitudes techniques to constrain cosmological correlators. In this talk, I will give an overview of the formalism of the wavefunction of the universe and how it relates to cosmological correlators. After this, I will review the success of the S-matrix programme in studying the analytic properties of the amplitude of scattering $A(s,t)$ in a gapped theory. Among the many results, I will focus on the sum rules for Wilson coefficients, which relate the coefficients in an EFT expansion with an integral of the UV completion of the theory. To incorporate the sum rules to the wavefunction of the universe framework, we define off-shell wavefunction coefficients whose analytic structure is fixed by its tree-level diagrams. The resulting sum rules encapsulate a larger set of Wilson coefficients than those from amplitudes. Finally, I will address future research in the rich interplay between amplitudes and cosmology

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