

## Non-local extension of Starobinsky inflation and targets for future CMB data

The emergence of  $R^2$  inflation which is the best fit framework for CMB observations to date comes from the attempts to attack the problem of quantization of gravity which in turn have resulted in the trace anomaly discovery. Further developments in trace anomaly and different frameworks aiming to construct quantum gravity indicate an inevitability of non-locality in fundamental physics at small time and length scales. A natural question would be to employ the  $R^2$  inflation as a probe for signatures of non-locality in the early Universe physics. Recently  $R^2$  inflation has been embedded in a string theory-inspired non-local gravity modification. We discuss the promising theoretical predictions of non-local  $R^2$ -like inflation with respect to the key observables such as tensor-to-scalar ratio, tensor tilt which tell us about the spectrum of primordial gravitational waves, and scalar Non-Gaussianities which tell us about the three-point correlations in the CMB fluctuations.

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**Session Classification:** Regular Sessions