Contribution ID: **16** Type: **Poster**

Planck Limits on Non-canonical Generalizations of Large-field Inflation Models

In this presentation, I consider two case examples of Dirac-Born-Infeld (DBI) generalizations of canonical large-field inflation models, characterized by a reduced sound speed, $c_S < 1$. The reduced speed of sound lowers the tensor-scalar ratio, improving the fit of the models to the data, but increases the equilateral-mode non-Gaussianity, $f_{\rm NL}^{\rm equil.}$, which the latest results from the Planck satellite constrain by a new upper bound. I examine constraints on these models in light of the most recent Planck and BICEP/Keck results, and find that they have a greatly decreased window of viability. The upper bound on $f_{\rm NL}^{\rm equil.}$ corresponds to a lower bound on the sound speed and a corresponding lower bound on the tensor-scalar ratio of $r \sim 0.01$, so that near-future Cosmic Microwave Background observations may be capable of ruling out entire classes of DBI inflation models. The result is, however, not universal: infrared-type DBI inflation models, where the speed of sound increases with time, are not subject to the bound.

Authors: STEIN, Nina (University At Buffalo); KINNEY, William (Univ. at Buffalo, SUNY)

Session Classification: Parallel Sessions: Early Universe (C.A.R.L., H03)

Track Classification: Early Universe