

Abstract Submitted
for the APR15 Meeting of
The American Physical Society

Sensitivity of Inflationary Predictions to Pre-inflationary Phases

SINA BAHRAMI, EANNA FLANAGAN, Cornell University, Physics Department,
LABORATORY FOR HIGH ENERGY PHYSICS TEAM — How sensitive are the
predictions of inflation to pre-inflationary conditions when the number of e-folds
of inflation is not too large? In an attempt to address this question, we consider
a simple model where the inflationary era is preceded by an era dominated by a
radiation fluid that is coupled to the inflaton only gravitationally. We show that
there is a natural generalized Bunch-Davies vacuum state for perturbations to the
coupled inflaton-gravity-fluid system at early times. With this choice of initial state
the model predicts interesting deviations from the standard power spectrum of single
field slow-roll inflation. However, the deviations are too small to be observable in
near future observations.

Sina Bahrami-Taghanaki
Cornell University, Physics Department

Date submitted: 07 Jan 2015

Electronic form version 1.4