Title: Non-minimal M-flation

## Abstract:

Matrix Inflation, or M-flation in brevity, is a string theory motivated model of inflation that uses the matrix degrees of freedom of a stack of D3 branes in appropriate fluxes to realize inflation. In its minimal format, which we call  $\mathbb{M}$ -flation, inflatons are minimally coupled to gravity. In order to match  $\mathbb{M}$ -flation with observation, one needs a large number of D3-branes that can backreact on the background geometry. Part of the inflaton potential, in which the presumed SU(2) configuration of the matrices is a local attractor and can sustain eternal inflation has been ruled out by PLANCK data. The spectator fields, whose masses depend on the effective inflaton, cannot be used as preheat fields if inflation happens in this region of potential too. I show how the non-Minimal version of the model, which we call non- $\mathbb{M}$ -flation can overcome all the aforementioned problems. I also suggest how this non-minimal coupling can arise in the string theory setup.