

Inflationary models are usually based on dynamics of one or more scalar fields coupled to gravity. In this work we present a new class of inflationary models, gauge-flation or non-Abelian gauge field inflation, where slow-roll inflation is driven by a non-Abelian gauge field. This class of models are based on a gauge field theory with a generic non-Abelian gauge group minimally coupled to gravity. We then focus on a particular gauge-flation model by specifying the action for the gauge theory which allows for a successful slow-roll inflation. This model has two parameters the value of which can be fixed using the CMB and other cosmological data. These values are within the natural range of parameters in generic grand unified theories of particle physics.