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Thermalized Axion Inflation

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I analyze the evolution of axion inflation, with gauge fields exponentially amplified by the inflaton velocity. I first review the resulting dynamics, that may lead to friction and oscillations in the inflaton trajectory. I discuss then the effects of interactions of the gauge fields: self-interactions, mediated by the axial coupling, or with Standard model fields. We show that scattering rates involving gauge fields can become larger than the expansion rate, due to the very large occupation numbers, and possibly create and sustain a thermal bath of particles of temperature T during inflation. In the thermal regime, energy is transferred to smaller scales, radically modifying the predictions of this scenario.

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