Multi-field Inflation in High-Slope Potentials

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The recent swampland conjectures have ruled out some of the simplest models of single-field inflation. Inspired by the distance conjecture and the high-slope conjecture, I will present two families of multi-field inflationary potentials compatible with the conjectures along the trajectory. One family is a helix-type potential that satisfies the conjectures only locally. This family inflates with $\epsilon V \gg \epsilon H$ and produces Planck-compatible scalar perturbations, but a too-high tensor power. Our other family of potentials globally satisfies the swampland conjectures and is in negatively-curved field space. It balances the potential gradient against the geometry to generate high turning rates. Due to the form of the potential, this model has exactly massless entropic perturbations and a light adiabatic mode. In the superhorizon limit, the entropic mode freezes out, which sources linear growth of the adiabatic mode. In contrast to hyperinflation, both families remain under perturbative control.

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