1 Potential Plots:

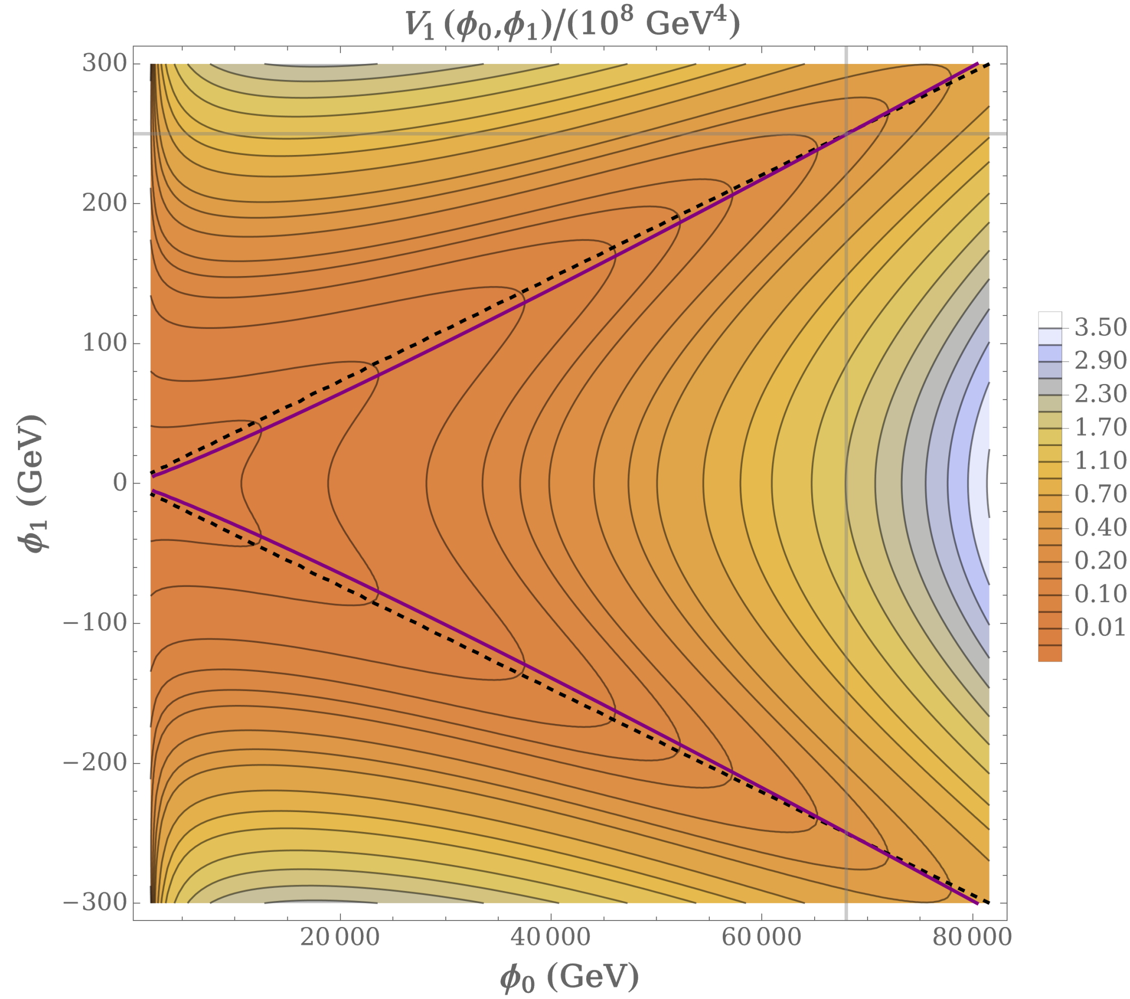

Figure 1: This plot shows how the energy of a physical system depends on two variables (called scalar fields, ϕ_0 and ϕ_1). These fields interact in a way that creates a kind of "landscape" — some areas are higher (more energy), others are lower (less energy). The thick purple line marks a special path where the system prefers to stay, because it's the most stable. The dashed black lines and gray grid help compare this path to earlier, simpler predictions.

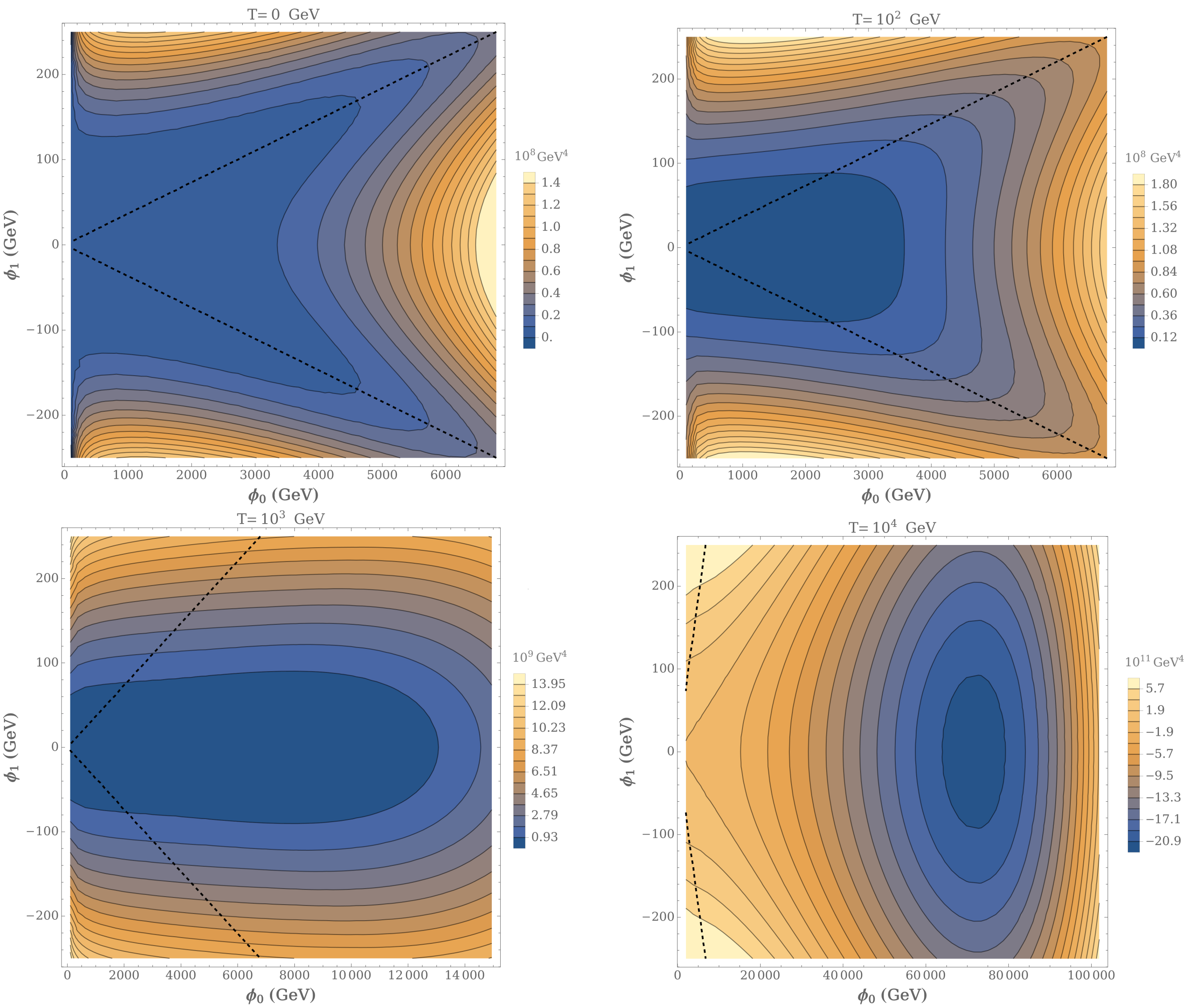

Figure 2: This series of plots shows how the system's energy landscape changes with temperature. At low temperature, the system has a special direction (dashed line) along which it is balanced. But as the temperature rises, this balance disappears. One of the fields (representing the Higgs particle) drops to zero, while the other field (called the dilaton) shifts to a new preferred value that grows with temperature. This reflects how the system reacts to heat, changing its internal structure.

2 Time Evolution Simulations Plots:

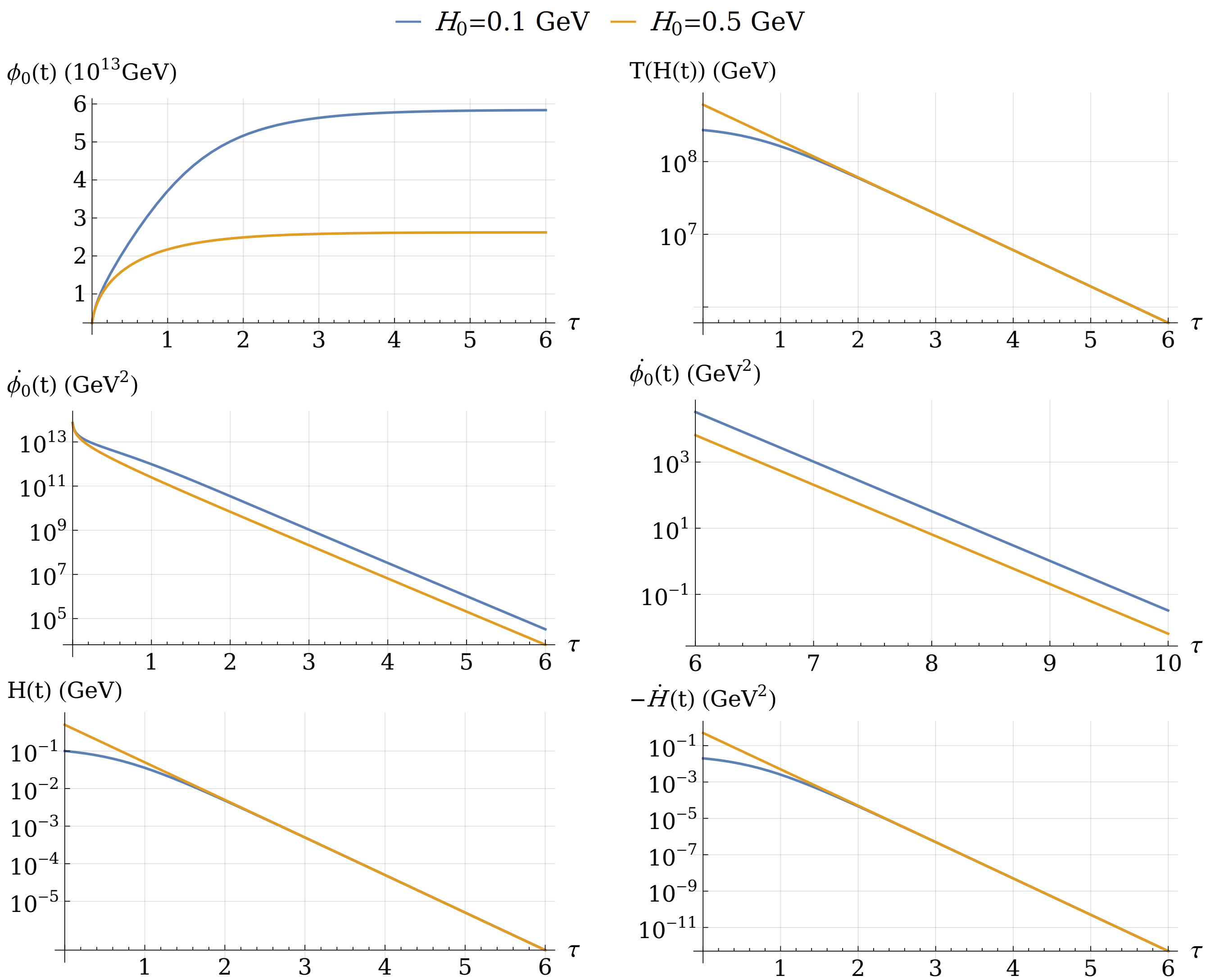

Figure 3: This plot shows how one of the fields in the model (called the dilaton, ϕ_0) changes over time, along with a related quantity from cosmology known as the Hubble parameter (H), which describes the expansion rate of the Universe. Over time, ϕ_0 settles into a stable value, meaning the system reaches a kind of balance. The bottom plot zooms in on how ϕ_0's rate of change slows down, confirming this stabilization. Time is shown on a logarithmic scale to capture both early and late behavior.

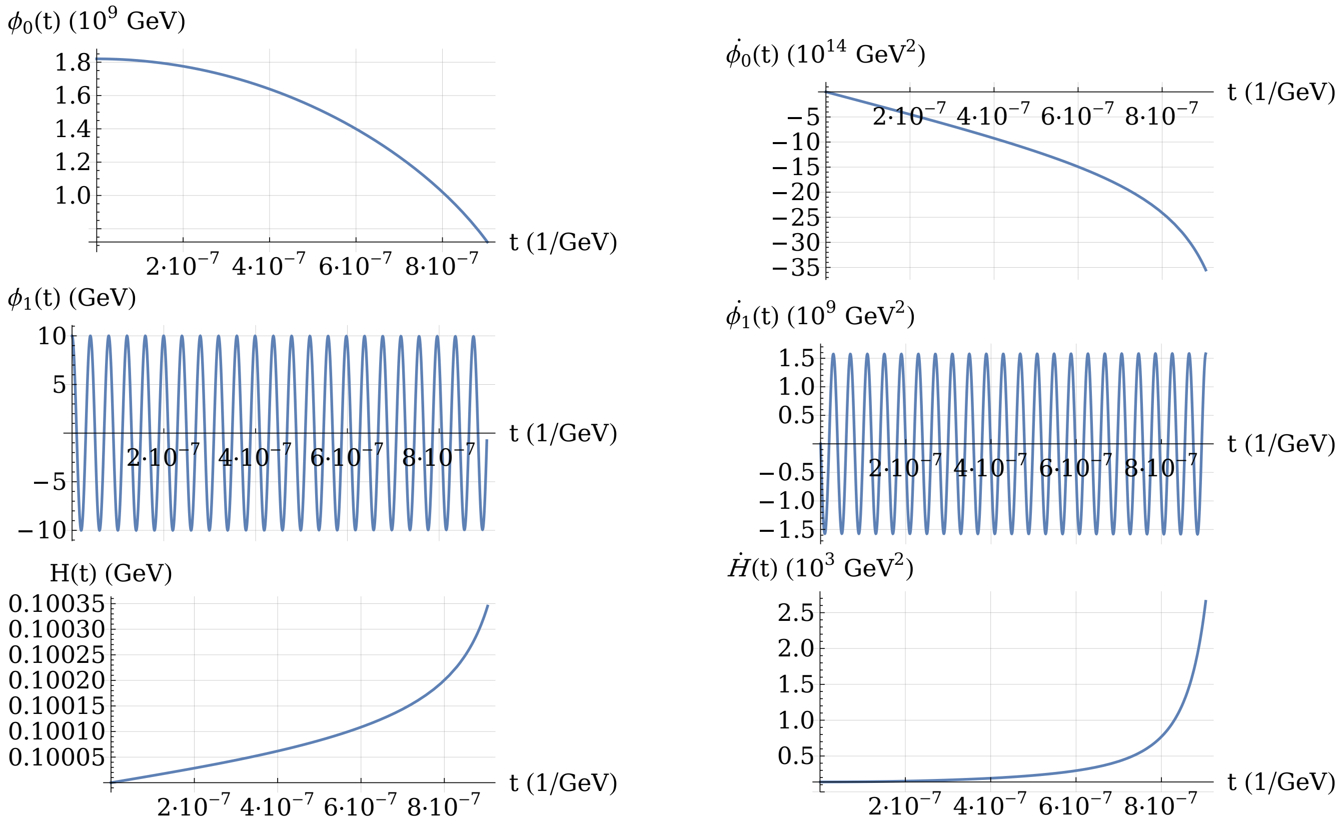

Figure 4: This plot shows how the two fields in the model (ϕ_0 and ϕ_1) and the Universe's expansion rate (Hubble parameter, H) change shortly after the beginning of the simulation. In this example, the starting point for ϕ_0 is based on how the system behaves at high temperature. This setup helps illustrate the early behavior of the fields. Only the most relevant, unstable scenario is shown for clarity.

3 Cosmic Inflation Plots:

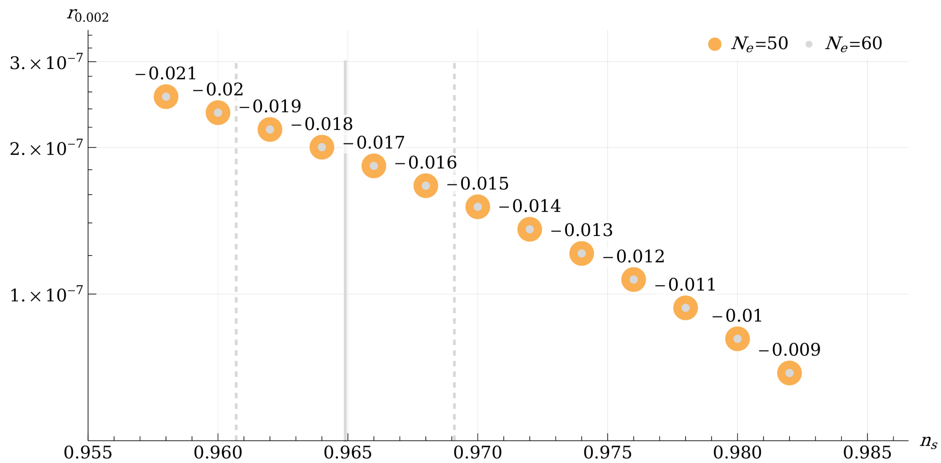

Figure 5: This plot shows how one important inflation prediction, $r_{0.002}$, varies with another key parameter, n_s, depending on how the end of inflation is defined. Different points correspond to different criteria for ending inflation, marked by numbers above them. The shaded lines represent the latest limits from cosmic microwave background observations by the Planck satellite, helping to see which scenarios agree with current data.

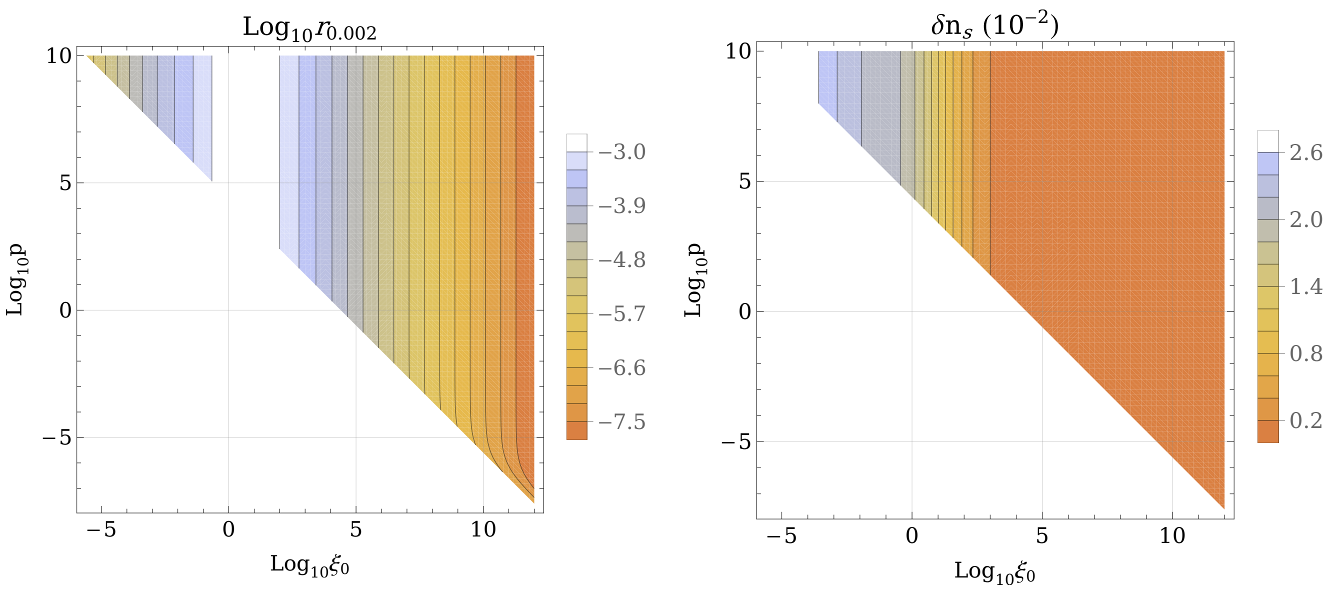

Figure 6: These plots show how changing two parameters, called ξ_0 and p, affects key predictions of the inflation model: the tensor-to-scalar ratio ($r_{0.002}$) and the spectral index (n_s). A specific condition sets the end of inflation, chosen so that n_s is close to 0.97, which matches observations of the early Universe.