Geometric Foundations of Gravity 2025



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Global Portraits of Inflation in Nonsingular Variables

In the phase space perspective, scalar field slow roll inflation is described by a heteroclinic orbit from a saddle type fixed point to a final attractive point. In many models the saddle point resides in the scalar field asymptotics, and thus for a comprehensive view of the dynamics a global phase portrait is necessary. For this task, in the literature one mostly encounters dynamical variables that either render the initial or the final state singular, thus obscuring the full picture. In this work we construct a hybrid set of variables which allow the depiction of both the initial and final states distinctly in nonsingular manner. To illustrate the method, we apply these variables to portray various interesting types of scalar field inflationary models like metric Higgs inflation, metric Starobinsky inflation, pole inflation, and a nonminimal Palatini model.

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