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Single superfield inflation, moduli stabilization, and supersymmetry breaking

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Supergravity is a well-motivated framework to study inflation. Recently (large field) inflation in supergravity with a single inflaton superfield (thus without the stabilizer field) obtained interests and was developed. Two major approaches are those of (1) Ketov and Terada (2014), and (2) Roest and Scalisi (2015), and also Linde (2015). We study consequences of combining these models of single superfield inflation with moduli and supersymmetry (SUSY) breaking sectors. In the simplest case, the inflaton superpotential is that of Polonyi model, and the scales of inflation, SUSY breaking, and moduli stabilization (a la KKLT) are the same. This turns out to be a severe constraint on the model. We also explore other models of this kind and derive constraints on inflationary models.

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