## Stability of f(R) gravity with dynamical system analysis

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Modified gravity theories have received increased attention lately to understand the late time acceleration of the universe. This viewpoint essentially modifies the geometric components of the universe. Among numerous extension to Einstein's theory of gravity, theories which include higher order curvature invariant, and specifically the class of f(R) theories, have received several acknowledgments. In our current work we try to understand the late time acceleration of the universe by modifying the geometry of the space and using dynamical system analysis. The use of this technique allows to understand the behavior of the universe under several circumstances. Apart from that we study the stability properties of the critical point and acceleration phase of the universe which could then be analyzed with observational data. We consider a particular model  $f(R) = R - \mu R_c (R/R_c)^p$  with 0 0 for the study. We consider the matter and radiation component of the universe with an assumption of no interaction between them and stability eras along with acceleration phases have been discussed in detail.