1 Problem 1: Acceleration from Modifiied Gravity

- Explore the possibility that the acceleration of the expansion is due to a modification of gravity instead of dark energy. Consider that the Hubble parameter $H(z)$ has dimensions of inverse length and suppose that there is some fundamental length scale at which gravity is modified r_c.

  By dimensional analysis, explore the possible changes to the left hand side of the Friedman equation that involve H and r_c (hint: astrophysicists love power laws). If the right hand side involves non-relativistic matter only ρ_m in a flat geometry, argue that there is a class of possibilities where the scale factor eventually scales exponentially with time as in the ΛCDM model.

  The "DGP" braneworld cosmology exhibits this sort of behavior.