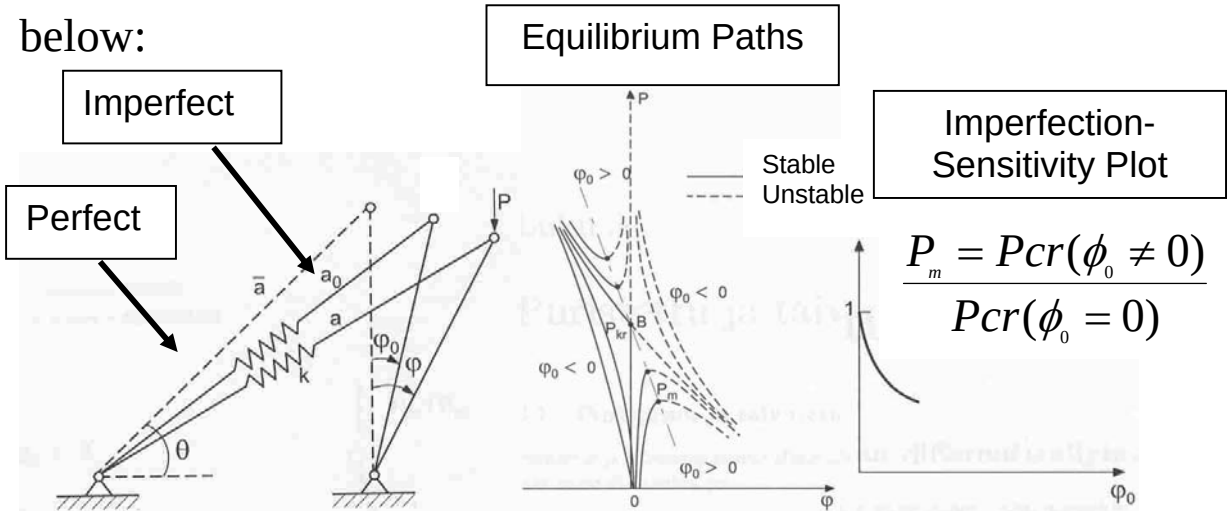
Homework # 2 :

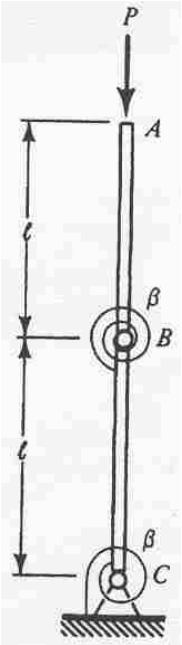
I) For the axially loaded rigid bar shown in the figure below:



a) For the cases of a *perfect and an imperfect system*, determine:

- Equilibrium paths
- Stability criteria
- Critical loading
- Stability of solutions
- Stability at the critical loading
- The imperfection-sensitivity plot of the critical loading

II) Two rigid bars are connected by rotational springs to each other and to the support ac C. Find the critical load (P_{cr}) assuming that the load *remains vertical*.



III) Determine the equilibrium path(s) of the structure shown below under the effect of the vertical load P. A frictionless hinge at C connects the two rigid bars AC and BC. A linearly elastic axial spring of stiffness (k) also supports the structure at B. The structure is in a state of stress-free condition when the angle is α as shown in the Figure. Investigate the stability of the equilibrium path.