

## Homework 09

### Problem 1 (5 points)

Consider a star with mass of  $4.5 M_{\odot}$  and radius of  $44.5 R_{\odot}$ . Find the period of pulsation of this star governed by pressure support. Does this period matches  $\delta$  Cephei.

### Problem 2 (5 points)

Does this star has a larger magnitude when it is compressed or when it is expanded. Why so?

### Problem 3 (5 points)

$\delta$  Cephei changes its magnitude from 2 to 10 over the period. What is required relative radius change to achieve such luminosity modulation? Assume that process is adiabatic and linearization holds even for large deviations.