

PHYS633 Introduction to Stellar Astrophysics

Spring 2008

Homework 8: Thermal stability

Due in class on Wednesday, May 14th, 2008

Suppose, instead of an inverse square law, the gravitational acceleration in a spherically symmetric star was given by

$$g = \frac{G_\alpha m}{r^\alpha},$$

where α and G_α are constants. Consider a star of uniform density supported by perfect gas pressure. For what range of α is nuclear burning at the center thermally stable? Are there any other restrictions on α ?