

Practice questions for lecture 21: X-ray bursts

1. Suppose that pure hydrogen falls on a neutron star surface, and that it merely settles without undergoing any fusion. Suppose also that at some point it fuses instantly and completely to helium. With these (incorrect) assumptions, make an energetic calculation to determine approximately what fraction of the accreted matter could be ejected to zero speed at infinity.
2. Do the same calculation as in problem 1, except for a white dwarf of mass $0.6 M_{\odot}$ and radius 10^9 cm. What do the results of your calculations suggest about some important differences between X-ray bursts on neutron stars, and classical novae from white dwarfs (both involving runaway fusion)?