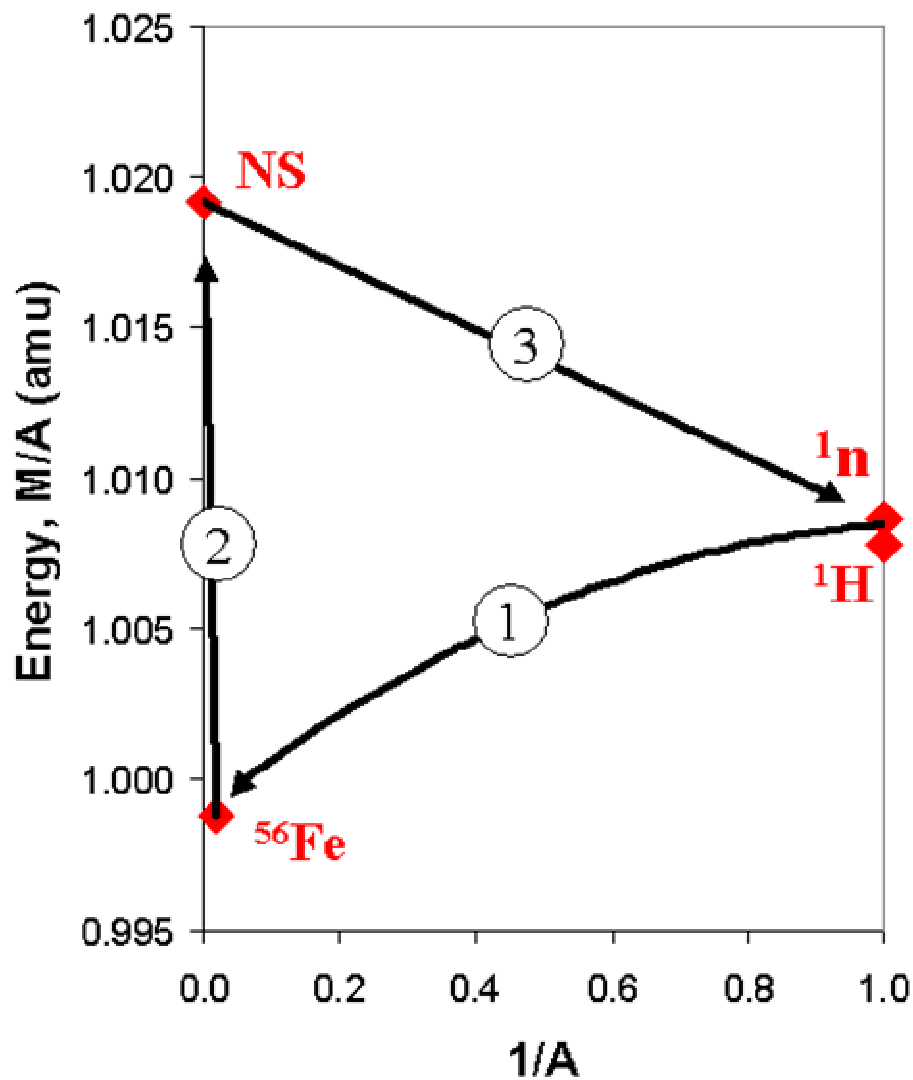


# Fusion and Dissociation of Nuclei in Stars



Nuclear evolution in the Sun and other stars, illustrated on a plot of  $M/A$  vs.  $1/A$ . **1.** First generation stars fuse  $^1\text{H}$  into heavier nuclides. **2.** At the end of their lives, material in the core is compressed into a neutron star (NS). Our Sun formed on this product. **3.** The NS acts as a giant nucleus, decaying by neutron emission ( $Q = 10^{-22}$  Mev per neutron;  $t_{1/2} \approx 10^{10}$  years). **4. = 1.** Most of the neutron decay product,  $^1\text{H}$ , is consumed by fusion as it moves upward, carrying lighter nuclides to the solar surface. This fusion repeats step # **1**. Each year,  $3 \times 10^{43}$   $\text{H}^+$  ions reach the solar surface and leave in the solar wind.