

⇒ Laser field with a fast twist

- spike at localized fuel
- initiates burn, propagates throughout fuel
- electron driven or proton driven
  - cone going into sphere, allows laser to penetrate more into center
- indirect drive
  - convert laser to x-ray in order to compress fuel

⇒ World Energy to 2050: Two scenarios

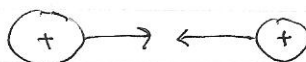
- what are we going to need in the future?
- Your standard of living depends on your use of energy
- Developing countries should increase their usage
- S1 ⇒ meet concerns + protocols for 2050
  - carbon limited
  - developing countries stop economic growth
  - U.S. did not sign Kyoto protocol
  - people will probably not buy into S1 (bad for pocketbook)
- S2 ⇒ keep some economic growth
  - double CO<sub>2</sub> production

⇒ Possible role of IFE in satisfying the world's energy needs

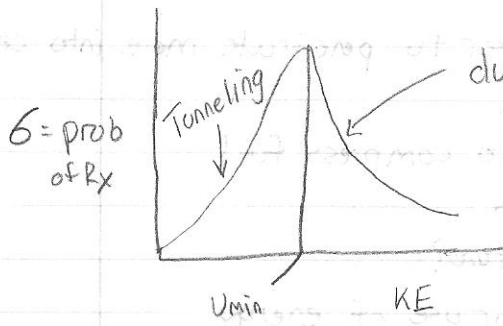
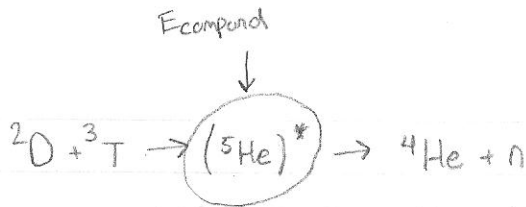
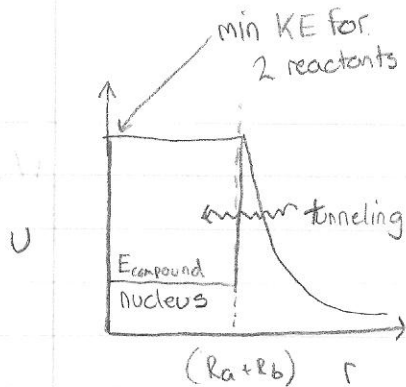
- so much energy is wasted in today's society
- increase in demand for power of  $(1-2.5) \times 10^{13}$  kW·h/a by 2050
- 25-63 1000 MW power plants built per year to accommodate this increase in demand
- The cost of developing IFE is estimated to be  $(10-25) \times 10^9$  annually over a period of 30 years

⇒ Chapter 2

- understand how to calculate a fusion reaction rate
  - cross section
  - rate of reaction
- Reaction in free space of two charged particles



$$F_c = \frac{1}{4\pi\epsilon_0} \frac{q_1 q_2}{r^2} \hat{r}$$



$$\sigma = \text{barns} = 10^{-24} \text{ cm}^2$$