The *Bambino:*
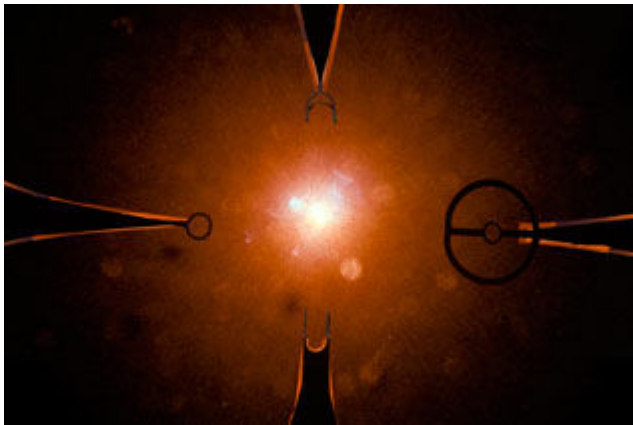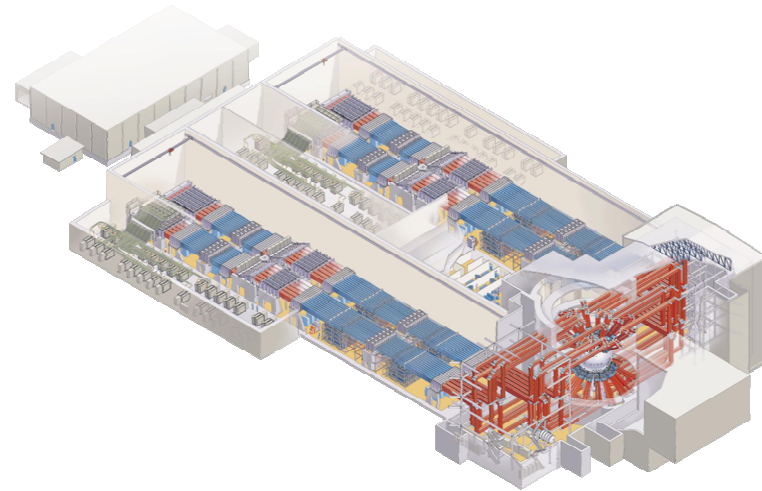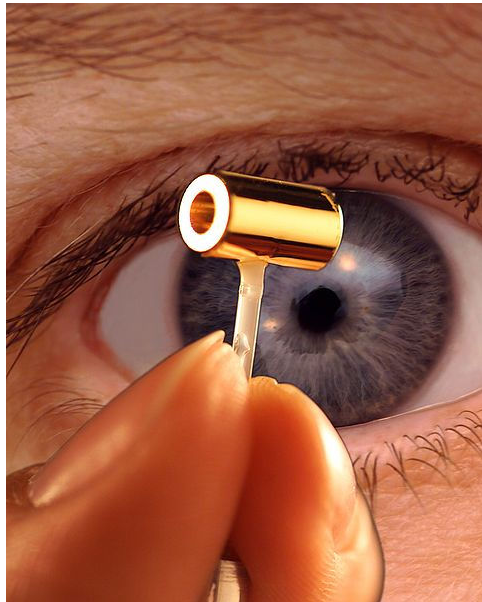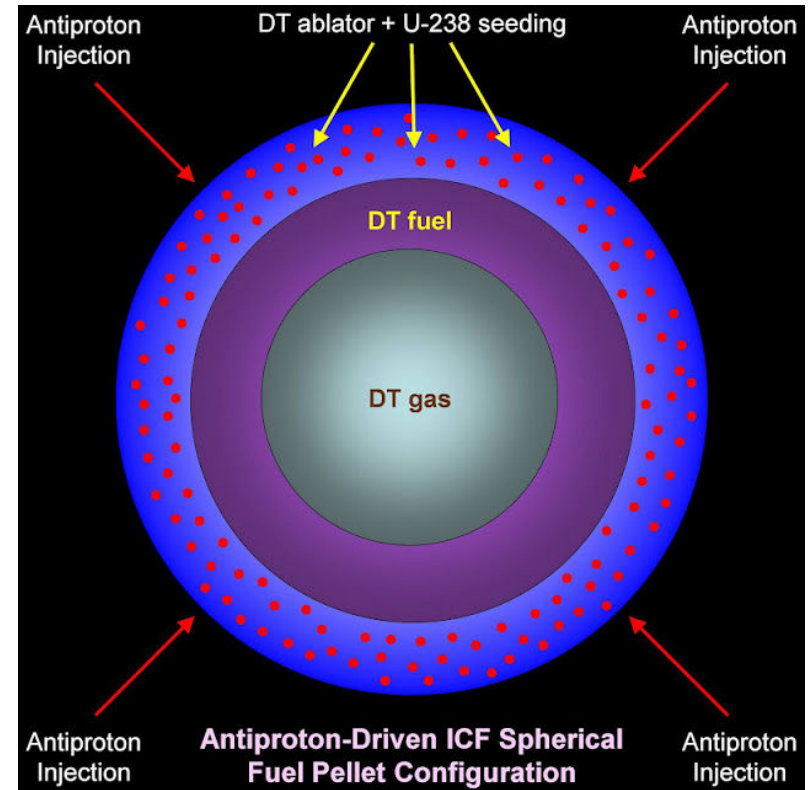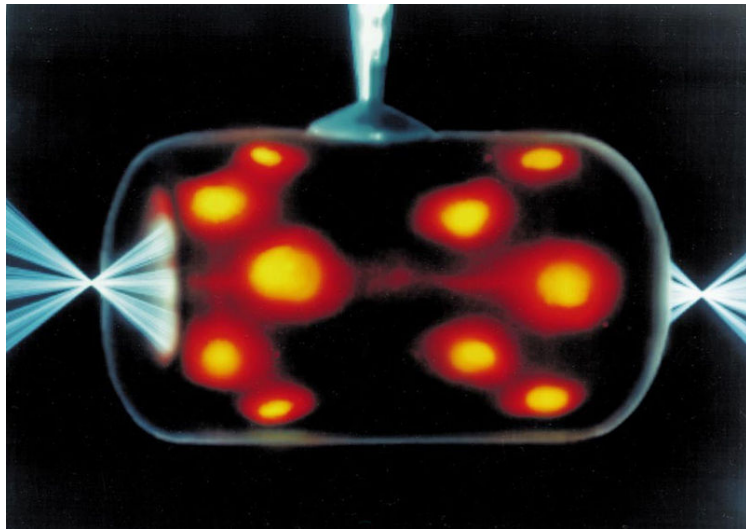# A Uranium Hydride Approach to Make the NIF Successfull

John Brandneburg

The NIF

- The NIF is supposed to ignite pure Fusion pellets using a holrahm approach

- It has so far been unsuccessful reaching only

  Q~ 1%   q= energy out/energy in

ICF pellet

Uranium Hydride weapons

Yeild = 200 tons TNT

But 1000 tons was expected.

http://en.wikipedia.org/wiki/Uranium_hydride_bomb

- Teller Concept: Mixing hydrogen or deuterium slows down the neutron to allow a smaller critical mass for uranium or plutonium

Test Produced Net Yield

- Mass disassembled faster than neutrons can diffuse so fission burn up was poor
- However, for smaller pellets diffusion can keep up with disassembly
- Reason : dissassembly speed goes as

Thermal speed Vs = $(kT/M)^{1/2}$

Dissassembly time   Td = R/Vs

- Diffusion time $T_{diffusion}$ ~ (R/δ) R/Vs
- R = radius of pellet δ = neutron mean free path
- Obviously if δ<<R T_d<< $T_{diffusion}$

"Bambino" Proposal

- Compress enriched uranium-deuteride pellets instead of deuterium-tritium pellets to obtain $Q > 1$

- *Good Luck !*