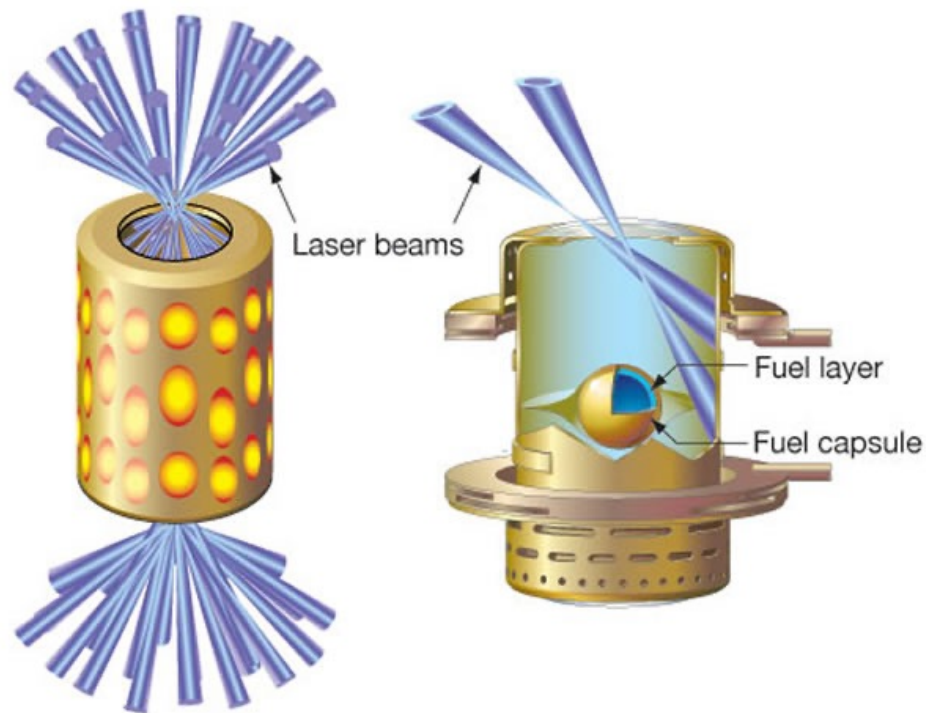


## Non-equilibrium tails of particle distribution:



When the mean-free-path is comparable to the plasma size, the particle distribution is no longer Maxwellian. In turn, for a charged particle, the mean-free-path scales as the square of this particle energy, so the tail of their distribution can be driven away from thermodynamic equilibrium even if the bulk particles are Maxwellian. It is the tail ions and electrons that are mostly responsible for fusion reactions and hard X-ray emission from HED plasmas. This project will elucidate the non-trivial connection between the kinetic and nuclear/radiation physics.