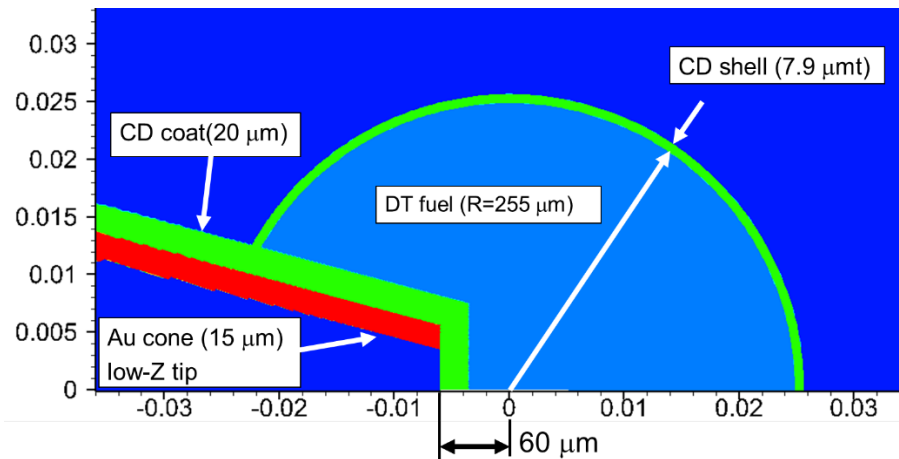
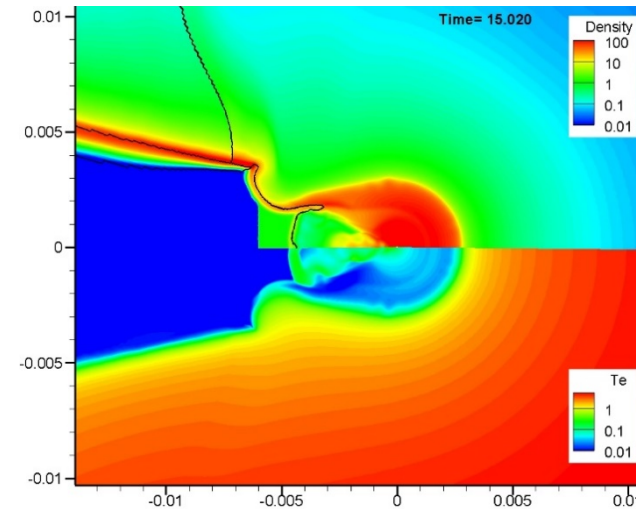


# Target design study of fast ignition for ignition and burning experiment (Nagatomo et al., IFE/P1-9)



*Initial target configuration*



*Density (upper) and electron temperature (lower) contours at the maximum compression time*

In the fast ignition of laser fusion, a reliable target design is required for an ignition scale target. This paper shows the first optimized target design of an implosion phase of the fast ignition, which is scalable to larger targets. In conclusion, a target can be highly compressed using multi-step laser pulse irradiation to a solid spherical target. In the FIREX-I scale implosion (6.25 kJ/0.35 μm), the maximum areal density of DT fuel ( $\rho R_{\text{max}}$ ) reaches 0.28 g/cm<sup>2</sup> with a gold guiding-cone according to two-dimensional simulation. Based on the hydrodynamic similarity, we estimate that the requirement of implosion laser energy for ignition scale target ( $\rho R_{\text{max}} = 1.1$  g/cm<sup>2</sup>) is 380 kJ.