

عنوان مقاله:

Propagation of 1-D thermal wave in laser heating of solid density DT fuel

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خلاصه مقاله:

The mechanisms for heat transport in high temperature laser produced plasmas have been a topic of extensive research. If the laser energy is released within the plasma and heated to a sufficiently high temperature, then a heat flux transported by heat conduction will appear. With a fusible target material, thermonuclear reactions will occur in the plasma, and reactions from such plasmas have been detected. Because of unequal heating in reaction products, electrons and ions in the plasma are at different temperatures. Owing to the smallness of the electron mass in compared with the ion mass, electrons have a much higher conductivity than the ions. In this article, energy transfer equations and symmetries of the equations in laser heating are presented. Results can be useful for understanding the electron temperature in a one-dimensional (1-D) thermal wave, velocity of propagation of 1-D thermal wave, and heating domain in laser heating of solid density deuterium-tritium (DT) fuel.

کلمات کلیدی:

thermal wave, laser heating, fusible target material, heat conduction, heating domain

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