

The use of laser instruments in almost every aspect of technology may lead to sudden exposing of human skin to laser radiation, especially with an invisible laser, such as continuous CO₂ laser, causing harmful thermal damage to the exposed area. This phenomena is studied in this work where the size of thermal damage is obtained using a well-known thermal dose equation which requires the transient temperature distributions obtained from finite element solution of the axi-symmetric heat equation. In this work a numerical simulation of these processes is applied indicating that the size of thermal damage zone inside human tissue seems to increase as power increases even if the exposing time is reduced, whereas the shape of thermally damage zone extends laterally much more than in-depth due to the effect of absorption coefficient and perfusion rate of skin tissue. Finally, this work may establish the concept of numerical investigation of an incidental laser hazard on human skin.