

# Two dimensional velocity and diffusion mapping in the case of three dimensional transient diffusion: “Flash” method and infrared image sequence analysis

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## Abstract

The aim of this work is to estimate two dimensional velocity and diffusivity mappings from the processing of infrared image sequences after a flash experiment. The experiment is performed over a “semi-infinite” medium. The practical implementation consists in creating an initial heterogeneous temperature field by putting a mask in front of the “Flash”. An analytical study is performed, based on the study of heat transfers in the IR sequences. It is a nodal approach based on the Total Least Squares formulation of the Energy Conservation Equation. Finally, diffusivity mappings and 2D velocity fields estimated from the study of simulated and real IR images sequences are presented.

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