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A Hyperbolic Two-Step Model Based Finite Difference Scheme for Studying Thermal Deformation in a Double-Layered Thin Film Exposed to Ultrashort-Pulsed Lasers¹

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Hyperbolic two-step micro heat transport equations have attracted attention in thermal analysis of thin metal films exposed to ultrashort-pulsed lasers. In this talk, we present a finite difference scheme for studying thermal deformation in a 2D double-layered micro thin film exposed to ultrashort-pulsed lasers. This scheme is obtained based on the hyperbolic two-step model with temperature-dependent thermal properties. The method is illustrated by investigating the heat transfer in a gold layer padding on a chromium layer. Result shows that there are not non-physical oscillations in the solution.

¹In collaboration with Tianchan Niu, Louisiana Tech University.