Characteristics-Based Schemes for the Hyperbolic Heat Conduction Equations BRIAN MCCARTIN, Kettering University — In some emerging technologies such as fast-paced laser heating of materials, transient heat transfer at low cryogenic temperatures, and microwave heating at very high frequencies, the wave nature of thermal phenomena must be properly taken into account. Herein, three second-order accurate (fourth-order accurate for unit Courant number) characteristics-based schemes for the hyperbolic heat conduction equations are derived and studied. Specifically, the dissipative and dispersive properties of these discrete schemes are compared to their continuum counterparts.

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