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**Development of Boundary Condition Independent Reduced Order Thermal Models using Proper Orthogonal Decomposition** ARUN RAGHUPATHY, Graduate Student, University of Cincinnati., KARMAN GHIA, Professor, Dept of AEEM, University of Cincinnati., URMILA GHIA, Professor, Dept of MINE, University of Cincinnati, Cincinnati, OH. — Compact Thermal Models (CTM) to represent IC packages has been traditionally developed using the DELPHI-based (**DE**velopment of **LI**braries of **PH**ysical models for an **I**ntegrated design) methodology. The drawbacks of this method are presented, and an alternative method is proposed. A reduced-order model that provides the complete thermal information accurately with less computational resources can be effectively used in system level simulations. Proper Orthogonal Decomposition (POD), a statistical method, can be used to reduce the order of the degree of freedom or variables of the computations for such a problem. POD along with the Galerkin projection allows us to create reduced-order models that reproduce the characteristics of the system with a considerable reduction in computational resources while maintaining a high level of accuracy. The goal of this work is to show that this method can be applied to obtain a boundary condition independent reduced-order thermal model for complex components. The methodology is applied to the 1D transient heat equation.

Prefer Oral Session  
 Prefer Poster Session

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