

Conduction Model Compatible for Multi-Physical Domain Dynamic Investigations: Bond Graph Approach

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Abstract : In the current paper, a domain independent conduction model compatible for multi-physical system dynamic investigations is suggested. By means of a port-based approach, a classical nonlinear conduction model containing physical states is first represented. A compatible discrete configuration of the thermal domain in line with the elastic domain is then generated through the enhancement of the configuration of the conventional thermal element. The presented simulation results of a sample structure indicate that the suggested conductive model can cover a wide range of dynamic behavior of the thermal domain.

Keywords : multi-physical domain, conduction model, port based modeling, dynamic interaction, physical modeling

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