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Thermodynamic consistency of objective rate equations

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Highlights

Deformable and heat-conducting solids are modelled by objective rate equations for stress and heat flux.

Objective time derivatives are those of Jaumann, Green-Naghdi, Oldroyd, and Truesdell. Thermodynamic consistency is established for the Jaumann, Green-Naghdi, Oldroyd derivatives in the spatial description.

Thermodynamic consistency of equations involving the Truesdell rate is shown in the material description.

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