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Development of a thermal reduced order model with explicit dependence on viscosity for a generalized Newtonian fluid

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Highlights

- A steady incompressible flow of pseudoplastic fluid in circular duct is considered.
- A method for building a thermo-rheological Reduced Order Model (ROM) is developed.
- The ROM is explicitly parametrized with consistency index and flow behavior index.
- The ROM is identified using optimization tools and viscosity-temperature data.
- Order 5 ROM reproduces temperatures of reference model with rms error $\approx 10^{-2}$ °C.

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