Equivalent partial differential equations and applications

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analysis of multiple relaxation times lattice Boltzmann schemes
with the Taylor expansion method and the ABCD approach:
generalization of the Chapman Enskog methodology

inverse problem for Navier Stokes $\Phi(W) = ?, \;\; S = ?$

isothermal Navier Stokes

D3Q27 has a discrepancy for isothermal Navier Stokes

D3Q27-2 available for isothermal Navier Stokes

thermal Navier Stokes

we must impose $\gamma \equiv \frac{c_p}{c_v} = 2$ (2d), $\gamma = \frac{5}{3}$ (3d)
and a Prandtl number satisfying $Pr = 1$

stability not been studied

exact solution of cosine advection operator with Fourier series

be careful with the initialization order !

coherent convergence order for finite time evolution

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thank you for your attention!