

A Fick's law recovering relaxation BGK operator for polyatomic mixtures

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In this talk, we extend the derivation of the Fick-relaxation BGK model, performed in [BP S12], to a polyatomic setting. The construction of the present model is based on the introduction of relaxation coefficients and by solving an entropy minimisation problem. The distribution functions of each species are described by adding a supplementary continuous variable collecting vibrational and translational energies. Finally, by using a Chapman-Enskog equation, we recover the Fick matrix, the volume viscosity and the shear viscosity under interesting conditions.

[BPS12] S. Brull, V. Pavan et J. Schneider. Derivation of BGK models for mixtures. *European Journal of Mechanics - B/Fluids*, 2012, p. 74-86.

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