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Frédéric Lagoutière - Convergence of a semi-discrete mesoscopic multi-fluid model toward the Baer-Nunziato equations

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We consider a bi-fluid Navier-Stokes semi-discrete model with two fluids with different pressure laws, at a scale where they are unmixed. We let this scale converge to 0 and we prove that the solution converges to the solution to the continuous Baer-Nunziato model in which all the coefficients are known (including the relaxation coefficient). The interest of this semi-dicrete approach is that it is easily discretized, what allows to illustrate the theoretical results.

The results have been obtained in collaboration with Didier Bresch, Cosmin Burtea and Pierre Gonin–Joubert.