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The diffusive limit for a radiative heat transfer system

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In this work, we study the diffusive limit approximation for a radiative heat transfer system under three different types of boundary conditions. We prove the global existence of weak solutions for this system by using a Galerkin method. Using the compactness method and Young measure theory, we prove that the weak solution converges to a nonlinear diffusion model in the diffusive limit. Under more regularity conditions on the limit system, the diffusive limit is also analyzed by using a relative entropy method. In particular, we get a rate of convergence. The initial and boundary conditions are assumed to be well-prepared in the sense that no initial and boundary layer exist. This is joint work with Xiaokai HUO (TU Wien) and Nader MASMOUDI (Courant Institute, NYUAD)

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