Existence and multiplicity of self–similar solutions for heat equations with nonlinear boundary conditions

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We are going to talk about self-similar solutions in the half-space for linear and semilinear heat equation. Existence, multiplicity and positivity of these solutions are analyzed. Self-similar profiles are obtained as solutions of a nonlinear elliptic PDE with drift term and a nonlinear Neumman boundary condition. We consider both subcritical and critical case by employing a variational approach and deriving some compact weighted embeddings for the trace operator.

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