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EXISTENCE FOR TURBULENT FLOWS THROUGH PERMEABLE MEDIA WITH UNBOUNDED TURBULENT-DEPENDING COEFFICIENTS

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Abstract.   A mathematical model that governs turbulent flows through permeable media is considered in this work. The model under consideration is based on a double-averaging concept which in turn is described by the time-averaging technique characteristic of the turbulence k–epsilon model and by the volume-averaging methodology that is used to model unstable flows through porous media. The functions of turbulence viscosity, turbulence diffusion and turbulence production are assumed to be unbounded with respect to the turbulent kinetic energy. For the associated initial-and boundary-value problem, we prove the existence of suitable weak solutions.