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Derivative estimates for generalized Forchheimer flows. Preliminary report.

The degenerate parabolic equation of the pressure is studied for generalized Forchheimer (non-Darcy) flows of slightly compressible fluids in porous media. No restriction is imposed on the degree of the Forchheimer polynomial. We estimate the L^∞ -norm of the pressure, its gradient and time derivative, with emphasis on large time estimates. We also establish the continuous dependence of the solution on the initial and boundary data, and coefficients of the Forchheimer polynomial. This is joint work with Thinh Kieu and Tuoc Phan. (Received February 07, 2014)