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Eduardo V. Teixeira* (teixeira@math.utexas.edu), Department of Mathematics, University of Texas at Austin, RLM 9.136, Austin, TX 78712-1082. *Strong solutions for differential equations in dual spaces.*

In this paper we prove that if $f: I \times E^* \rightarrow E^*$ is a measurable family of sequentially weak-* continuous maps between a dual space then there exists a local classical solution for the related IVP. This generalizes previous results on reflexive Banach spaces. Generalizations to locally convex spaces are also considered. As an application, we study in detail a nonlinear differential equation involving the remarkable Hardy-Littlewood maximal operator. (Received February 26, 2004)