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Diego R. Moreira* (dmoreira@math.utexas.edu), Department of Mathematics, University of Texas at Austin, RLM 12.128, Austin, TX 78712-1082, and **Eduardo V. Teixeira** (teixeira@math.utexas.edu), Department of Mathematics, University of Texas at Austin, RLM 9.136, Austin, TX 78712-1082. *On the behavior of weak convergence under nonlinearities and applications.*

This paper provides a sufficient condition to guarantee the stability of weak limits under nonlinear operators acting on vector-valued Lebesgue spaces. This nonlinear framework places the weak convergence in perspective. We illustrate how this approach allows short and insightful proofs of some important results in Functional Analysis. The final goal is to use this framework as a strategy to grapple with a nonlinear weak spectral problem on $W^{1,p}$. (Received February 26, 2004)