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Tadele Mengesha* (mengesha@math.psu.edu) and **Nguyen C Phuc** (pcnguyen@math.lsu.edu). *Quasilinear equations with general structure and divergence data over nonsmooth domains.*

A global estimate in the weighted Lorentz space is obtained for the gradient of solutions to quasilinear Dirichlet boundary value problems over a bounded nonsmooth domain. As a consequence of this, regularity estimates in Morrey, Lorentz-Morrey and Hölder spaces are also established. These results generalize various existing estimates for nonlinear equations. The nonlinearities have a general structure, are assumed to be elliptic and satisfy a uniform small mean oscillation. The boundary of the domain, on the other hand, may exhibit roughness but assumed to be sufficiently flat in the sense of Reifenberg. Our approach uses maximal function estimates and Vitali covering lemma, and also known regularity results of solutions to nonlinear homogeneous equations. As an application of the estimates an existence result for a quasilinear Riccati-type equations is established. This is a joint work with Nguyen C Phuc. (Received August 16, 2013)