1103-35-44 **Dario D. Monticelli*** (dario.monticelli@unimi.it), Via Saldini 50, 20133, Milano, Italy, and **Scott W. Rodney** and **Richard L. Wheeden**. *Regularity results for weak solutions of degenerate quasilinear equations with rough coefficients.*

I will present some recent developments concerning local boundedness estimates, regularity results and the validity of a Harnack inequality for weak solutions of a large class of second order degenerate elliptic quasilinear equations with rough coefficients in divergence form. The possible degeneracy of an equation in the class is expressed in terms of a nonnegative definite quadratic form Q associated with its principal part, and weak solutions are assumed to belong to degenerate Sobolev-type spaces, related to the quadratic form Q. No smoothness is required of the quadratic form or the coefficients of the equation.

We operate in an abstract axiomatic setting which assumes the validity of certain local Sobolev and Poincaré inequalities related to Q, as well as the existence of suitable families of Lipschitz cutoff functions. We also assume that the underlying measure is locally doubling.

Our results extend ones obtained on second order elliptic equations by Serrin (1964) and Trudinger (1967), as well as ones for subelliptic linear equations with rough coefficients obtained by Sawyer–Wheeden (2008–2012).

These results are joint work with S. Rodney (Cape Breton University, Sydney, Canada) and R. L. Wheeden (Rutgers University, New Brunswick, NJ, USA). (Received August 05, 2014)