1067-35-797   **Tadele Mengesha*** (`mengesha@math.lsu.edu`), Department of Mathematics, Louisiana State University, 303 Lockett Hall, Baton Rouge, LA 70803, and **Robert Lipton**, Department of Mathematics, Louisiana State University, 303 Lockett Hall, Baton Rouge, LA 70803. *Local representations of L^∞ norms for weakly convergent sequences of gradient fields.*

In this talk we discuss the asymptotic behaviour of the L^∞ norms of a weakly convergent sequence of gradient fields associated with the homogenization of second order divergence form pde with measurable coefficients. For general oscillatory coefficients we identify local representation formulas that provide upper bounds on the limit superior of L^∞ norms of gradient fields. The formulas are expressed in terms of the weak limit of the gradient fields and local corrector problems. For the special cases of the fine phase limits for layered microstructures and (for sufficiently smooth) periodic microsturctures we provide an explicit local formula for the limit of the L^∞ norms of the associated sequence of gradient fields. Local representation formulas for lower bounds are also obtained for fields corresponding to continuously graded periodic microstructures. (Received September 14, 2010)