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**Y.Y. Li\*** ([yyli@math.rutgers.edu](mailto:yyli@math.rutgers.edu)), 110 Frelinghuysen Rd., Piscataway, NJ 08854. *Extension to a classical theorem of Liouville and applications.*

The classical Liouville theorem says that a positive entire harmonic function must be constant. We give a fully nonlinear version of it. This extension enables us to establish optimal local gradient estimates of solutions to general conformally invariant fully nonlinear elliptic equations of second order. This talk will start from a new proof of the classical Liouville theorem using only the comparison principle and the invariance of harmonicity under Moebius transformations. We will then outline the proof of the comparison principle used in establishing the new Liouville theorem. Finally we outline the proof of the gradient estimates via the Liouville theorem. (Received August 06, 2007)