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Aobing Li* (aobingli@math.wisc.edu), University of Wisconsin-Madison, Mathematics
Department, 480 Lincoln Dr, Madison, WI 53706. *Liouville Type Theorem on some fully nonlinear degenerate differential equations.*

For $n > 2$, It is well-known that a positive harmonic function on R^n must be a constant. More generally, for any conformal metric of the Euclidean metric g_{flat} , $g = u^{\frac{4}{n-2}} g_{flat}$, we denote the eigenvalues of the Schouten tensor $A_g = Ricci_g - \frac{1}{2(n-1)} R_g$ by $\lambda(A^u)$. We consider the equation $\sigma_k(\lambda(A^u)) = 0$ with $\lambda(A^u)$ on the boundary of a positive cone Γ_k , which is a degenerate equation. A result by Chang-Gursky-Yang concluded any $C^{1,1}$ solution on R^n must be a constant when $(n, k) = (4, 2)$. We proved the same result in the case $(n, k) = (3, 2)$. A work by Y.Y Li established the more general equations only allowed constant $C^{1,1}$ solutions as an entire solution on R^n . As a special case $k = 1$, the solution is harmonic. One of applications is used in the blow-up analysis in solving fully nonlinear Yamabe problem. (Received February 10, 2006)