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Andrzej Swiech* (swiech@math.gatech.edu), School of Mathematics, Georgia Institute of Technology, 686 Cherry Street, Atlanta, GA 30332, and **Shigeaki Koike**. *Some new results on ABP maximum principle and weak Harnack inequality.*

Aleksandrov-Bakelman-Pucci (ABP) maximum principle and Harnack inequality are classical tools in the theory of elliptic PDE . In the last two decades these topics have been revisited for fully nonlinear uniformly elliptic equations from the point of view of viscosity solutions. We will discuss when the ABP maximum principle is true for viscosity solutions of equations with superlinear growth in the gradient in which case it has been known to fail in general. Moreover we will present an improvement in the weak Harnack inequality for fully nonlinear equations. We will show how these techniques allow to obtain new results about solvability of fully nonlinear PDE, in particular of certain Pucci extremal equations. (Received January 14, 2010)