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**Scott N Armstrong\*** ([armstrong@math.lsu.edu](mailto:armstrong@math.lsu.edu)), Louisiana State University, Department of Mathematics, 303 Lockett Hall, Baton Rouge, LA 70803. *Studying the infinity Laplace equation via a finite difference approximation.*

I will summarize recent research in collaboration with Charles Smart. We show that by slightly modifying infinity subharmonic functions by "maxing over small balls", we obtain subsolutions of a certain finite difference approximation. This allows us to study the infinity Laplace equation by focusing on this finite difference equation, which is simpler to analyze. We obtain new stability, existence, uniqueness, and convergence theorems for the infinity Laplacian, and some very simple new proofs of known results like Jensen's uniqueness theorem. (Received September 22, 2009)