Meeting: 1006, Lubbock, Texas, SS 5A, Special Session on Recent Advances in Complex Function Theory

1006-30-158 **Albert Baernstein II*** (al@math.wustl.edu) and **Leonid V. Kovalev** (lkovalev@math.wustl.edu). *Holder continuity of a class of quasiregular mappings.*

Let f be a K-quasiregular mapping from a plane domain Ω into the plane. A classical result asserts that f satisfies a local Hölder condition of order $1/K$, and that $1/K$ is the largest possible exponent which works for all such f. We prove, though, that $1/K$ can be improved to a value $\alpha_K > 1/K$ under the additional assumption that the complex derivative $f_{\bar{z}}$ be real valued in Ω. We also offer a conjecture for the best possible value of α_K, and prove it in special cases. An equivalent form of our improvement may be stated as follows: Let a, b, c be real valued measurable functions in Ω, and assume that the eigenvalues of the associated coefficient matrix lie almost everywhere between $K^{-1/2}$ and $K^{1/2}$. Then each L^2-strong solution u of the elliptic pde $au_{xx} + 2bu_{xy} + cu_{yy} = 0$ belongs locally to C^{1,α_K}, where $\alpha_K > 1/K$. (Received February 14, 2005)