November 30, 2016, 17:00-18:30

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SOBOLEV INTEGRABILITY OF SOLUTIONS OF THE BELTRAMI EQUATION

The self-improvement of the integrability of functions $f \in W^{1,q}_{loc}(\mathbb{C})$ solving the Beltrami equation $f_{\bar{z}} - \mu f_z = 0$ for $\|\mu\|_{L^\infty(\mathbb{C})} = k < 1$ and their derivatives is discussed. More precisely, we find that the smallest q such that if $f \in W^{1,q}_{loc}(\mathbb{C})$ solves the equation then $f \in W^{1,2}_{loc}(\mathbb{C})$ is exactly $q = 1 + k$. For this purpose we use the theory of A_p weights and we study the Beltrami operators $I - \mu T$, T being the Ahlfors-Beurling operator.

This seminar is mainly based in the results by K. Astala, T. Iwaniec and E. Saksman in *Beltrami operators in the plane* (Duke Math. J. 107 (2001), no. 1, 27-56.) and in part of the notes of a course given by O. Dragičević in Seville in September 2013.