

1125-VB-2569 **Ashok Aryal*** (aaryal@ksu.edu), Mathematics Department, 138 Cardwell Hall, 1228 N. 17th Street, Manhattan, KS 66506. *Mean Value Theorem for general divergence form elliptic operators.*

The Mean Value Theorem (MVT) is one of the most fundamental theorems in the study of harmonic functions. The proof most often seen assumes twice differentiability of the functions, and it is not easy to follow. In his Fermi lectures in 1998, Caffarelli gave a short, intuitive proof which makes minimal assumptions of regularity on the functions in question. In the same notes, he observed that although his proof looked like it needed to use some of the nicer properties of the Laplacian, in fact all he really needed was to be able to solve an appropriate obstacle problem in order to extend everything to general divergence form elliptic PDEs. In this talk, after giving some background of Caffarelli's proof of the MVT, and I will begin to discuss the obstacle problem and give some description of the essential elements of the proof of the MVT in general divergence form. (Received September 20, 2016)