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Xiu Xiong Chen*, University of Wisconsin, Department of Mathematics, 480 Lincoln Drive, 805 Van Vleck, Madison WI 53706-1388. *Foliation by holomorphic discs and its application in Kähler geometry*. Preliminary report.

In this talk, we will explain a new partial regularity theory for certain homogeneous complex Monge-Ampere equations and its applications to extremal Kähler metrics in complex geometry. This is a joint work with G, Tian.

As consequences of this new theory, we prove the uniqueness of extremal Kähler metrics and give an necessary condition for existence of extremal Kähler metrics. (Received May 13, 2004)