FACHBEREICH 10
MATHEMATIK UND INFORMATIK
Prof. Dr. Xiaoyi Jiang
Dekan

22.01.2021

E i n l a d u n g

zu der am Mittwoch, den 27. Januar 2021,
um 15:30 Uhr per Onlinevortrag über Zoom stattfindenden

A n t r i t t s v o r l e s u n g

von Herrn Prof. Dr. Hans-Joachim Hein

über das Thema

„Liouville and Bernstein phenomena in the theory of geometric PDEs“

Kurzfassung:
Liouville's theorem says that a bounded entire holomorphic function on the complex plane must be a constant. Bernstein's theorem says that a minimal surface in $R^{\wedge 3}$ which can be written as the graph of a function defined on all of $R^{\wedge 2}$ must be a plane. In the early history of PDEs, theorems of this type were viewed as curious consequences of more fundamental regularity theorems that prohibit solutions of the PDE from forming singularities on small scales. However, it gradually became clear that Liouville and Bernstein theorems can often be established directly because they deal with particularly special and rigid situations, and that they conversely imply regularity theorems via the method of blowup and contradiction. This approach is now pervasive in geometric analysis and was for example one of the keys to Perelman's solution of the Poincaré conjecture. In this talk, I will tell this story from its early beginnings, focussing on the Monge-Ampère equation as our key example of an elliptic PDE and making contact with some very recent applications to new regularity estimates for collapsing Calabi-Yau manifolds.

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