國立中山大學應用數學系

學術演講

講　者：Professor Paul Horn（University of Denver）

講　題：Discrete Curvature, Graph Geometry and PageRank

時　間：2019/09/30（Monday）15:10 ∼ 16:00

地　點：理學院四樓理 SC 4011 室

茶　會：16:00 於理 SC 4010 室（系辦公室）

Abstract

One of the most important ways of controlling the geometry of a Riemannian manifold is through curvature lower bounds. Because of the power of curvature in controlling geometric properties of manifolds, and because of recognized analogies between graphs and manifolds through their spectral properties, a great deal of recent work has gone into defining curvature notions for graphs that serve as a 'local' way to understand 'global' geometric properties of the graph. In this talk we'll discuss some of these efforts and a new application to the study of PageRank. PageRank, as introduced by Brin and Page, and more generally 'personalized PageRank,' has been of fundamental importance in network search. A key parameter in PageRank is the 'jumping constant' which allows (among other things) one to tailor the sensitivity of PageRank to local cuts. In this talk, we describe new gradient estimates (akin to the Li–Yau inequality for solutions to the heat equation) and Harnack type inequalities for graphs satisfying certain curvature conditions. These allow us to compare the 'importance' of different nodes, and how PageRank regularizes as the jumping constant goes to zero.

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