1147-05-788 **Paul Horn*** (paul.horn@du.edu) and **Lauren Nelsen**. *Gradient and Harnack type Inequalities for 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. (Received January 28, 2019)