图与组合系列讲座之五十二（张经枚）

报告题目： On the size of $(K_t, \mathcal{T}_k)$-co-critical graphs

报 告 人： 张经枚（南方科技大学，博士）

报告时间： 2019 年 11 月 9 日（周六）10:00-11:00

报告地点： 磐苑校区数学科学学院 H306

报告摘要： Given an integer $r \geq 1$ and graphs $G, H_1, \ldots, H_r$, we write $G \to (H_1, \ldots, H_r)$ if every r coloring of the edges of G contains a monochromatic copy of H_i in color i for some $i \in \{1, \ldots, r\}$. A non-complete graph G is $(H_1, \ldots, H_r)$ -co-critical if $G \not\to (H_1, \cdots, H_r)$, but $G + e \to (H_1, \ldots, H_r)$ for every edge e in $\overline{G}$. Motivated by Hanson and Toft's conjecture [Edge-colored saturated graphs, J. Graph Theory 11(1987), 191-196], we study the minimum number of edges over all $(K_t, \mathcal{T}_k)$-co-critical graphs on n vertices, where $\mathcal{T}_k$denotes the family of all trees on k vertices. Following Day [Saturated graphs of prescribed minimum degree, Combin. Probab. Comput. 26 (2017), 201-207], we apply graph bootstrap percolation on a not necessarily K_t-saturated graph to prove that for all $t \geq 4$ and $k \geq max\{6, t\}$, there exists a constant $c(t, k)$ such that, for all $n \geq (t-1)(k-1)+1$, if G is a $(K_t, \mathcal{T}_k)$-co-critical graph on n vertices, then

$$e(G) \geq \left(\frac{4t-9}{2} + \frac{1}{2}\left\lceil\frac{k}{2}\right\rceil\right)n - c(t, k).$$

Furthermore, this linear bound is asymptotically best possible when $t \in \{4,5\}$ and $k \geq 6$. The method we developed may shed some light on attacking Hanson and Toft's conjecture.

欢迎各位老师、同学届时前往！

数学科学学院

2019 年 11 月 6 日

专家简介: 张经枚，博士，现为南方科技大学科研助理。2011 年硕士毕业于安徽大学数学科学学院，硕士毕业后任职于池州学院。2014 年进入美国中佛罗里达大学学习，并于 2019 年获博士学位。主要研究兴趣有图论、组合。