Contribution ID: 4

Type: Contributed talk

Bounds for the twin-width of graphs

Tuesday, 21 December 2021 11:00 (25 minutes)

Bonnet, Kim, Thomass\'{e}, and Watrigant (2020) introduced the twin-width of a graph. We show that the twin-width of an *n*-vertex graph is less than $(n + \sqrt{n \ln n} + \sqrt{n} + 2 \ln n)/2$, and the twin-width of an *m*-edge graph is less than $\sqrt{3m} + m^{1/4}\sqrt{\ln m}/(4\cdot 3^{1/4}) + 3m^{1/4}/2$. Conference graphs of order *n* (when such graphs exist) have twin-width at least (n - 1)/2, and we show that Paley graphs achieve this lower bound. We also show that the twin-width of the Erd\H{o}s-R\'{e}nyi random graph G(n,p) with $1/n \leq p \leq 1/2$ is larger than $2p(1-p)n - (2\sqrt{2} + \varepsilon)\sqrt{p(1-p)n \ln n}$ asymptotically almost surely for any positive ε . Lastly, we calculate the twin-width of random graphs G(n,p) with $p \leq c/n$ for a constant c < 1, determining the thresholds at which the twin-width jumps from 0 to 1 and from 1 to 2.

Primary authors: Mr KIM, Donggyu (KAIST and IBS DIMAG); AHN, Jungho (KAIST and IBS DIMAG); Dr HENDREY, Kevin (IBS DIMAG); Prof. OUM, Sang-il (IBS DIMAG and KAIST)

Presenter: AHN, Jungho (KAIST and IBS DIMAG)

Session Classification: Session