

A STRENGTHENING OF ERDŐS-GALLAI THEOREM AND PROOF OF WOODALL'S CONJECTURE

Online seminar

**Speaker: Prof. Binlong Li
Northwestern Polytechnical University**

Time: Thur, Mar. 26th, 15:00-16:00

Tencent Meeting ID: 906 882 177

Click the link and join the meeting:

<https://meeting.tencent.com/s/5nF8tNH8bcb95>

Abstract: For a 2-connected graph G on n vertices and two vertices $x, y \in V(G)$, we prove that there is an (x, y) -path of length at least k if there are at least $(n-1)/2$ vertices in $V(G) \setminus \{x, y\}$ of degree at least k . This strengthens a well-known theorem due to Erdős and Gallai in 1959. As the first application of this result, we show that a 2-connected graph with n vertices contains a cycle of length at least $2k$ if it has at least $n/2 + k$ vertices of degree at least k . This confirms a 1975 conjecture made by Woodall. As other applications, we obtain some results which generalize previous theorems of Dirac, Erdős-Gallai, Bondy, and Fujisawa et al., present short proofs of the path case of Loebel-Komlós-Sós Conjecture which was verified by Bazgan et al. and of a conjecture of Bondy on longest cycles (for large graphs) which was confirmed by Fraise and Fournier, and make progress on a conjecture of Bermond.