A STRENGTHENING OF ERD˝OS-GALLAI THEOREM AND PROOF OF WOODALL´S CONJECTURE

Online seminar

Speaker: Prof. Binlong Li
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Time: Thur, Mar. 26th, 15:00-16:00
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Abstract: For a 2-connected graph G on n vertices and two vertices x, y ∈ 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)\{x, y} of degree at least k. This strengthens a well-known theorem due to Erd˝os 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, Erd˝os-Gallai, Bondy, and Fujisawa et al., present short proofs of the path case of Loebl-Koml´os-Conjecture which was verified by Bazgan et al. and of a conjecture of Bondy on longest cycles (for large graphs) which was confirmed by Fraisse and Fournier, and make progress on a conjecture of Bermond.