

# Degree powers in graphs with a forbidden forest

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For a graph  $G$  with degree sequence  $d_1, \dots, d_n$ , and for a positive integer  $p$ , let  $e_p(G) = \sum_{i=1}^n d_i^p$ . In 2000, Caro and Yuster [A Turán type problem concerning the powers of the degrees of a graph, *Electron. J. Combin.* 7 (2000), R47] introduced the following Turán type problem: *Given a positive integer  $p$  and a graph  $H$ , determine the function  $\text{ex}_p(n, H)$ , which is the maximum value of  $e_p(G)$  taken over all graphs  $G$  on  $n$  vertices that do not contain  $H$  as a subgraph.* Obviously, we have  $\text{ex}_1(n, H) = 2\text{ex}(n, H)$ , where  $\text{ex}(n, H)$  denotes the classical Turán function. Previous results on this problem, obtained by various authors, include the determination of the function  $\text{ex}_p(n, H)$  when  $H$  is a complete graph, a cycle, a path, and a star. In this talk, we shall present some new results for the function  $\text{ex}_p(n, H)$  when  $H$  is a certain type of forest, namely, a linear forest, a star forest, and a broom (i.e., a path with a star at one end). This talk is based on joint work with Yongxin Lan (Nankai University), Zhongmei Qin (Chang'an University) and Yongtang Shi (Nankai University).