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*Extremal trees for eigenvalue combinations*

Let  $\lambda_1(T) \geq \lambda_2(T) \geq \dots \geq \lambda_n(T)$  be the eigenvalues of an  $n$ -vertex tree  $T$ . Trees for which  $\lambda_1(T)$  or  $\lambda_2(T)$  is largest or smallest possible among all  $n$ -vertex trees have been classified. In this talk the speaker will discuss extremal trees for linear combinations  $\alpha\lambda_1(T) + \beta\lambda_2(T)$ , where  $\alpha, \beta \in \mathbb{R}$ . This is joint work with Hitesh Kumar, Shivaramakrishna Pragada, and Harmony Zhan.