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On the unimodality of coefficients of the distance characteristic polynomial of a tree.

There are several sequences in combinatorics which are known/conjectured to be unimodal. Some families of these sequences consist of the coefficient sequence of a polynomial associated to a combinatorial structure. One instance of such polynomials is the characteristic polynomial of the distance matrix of a tree. For a tree T with distance characteristic polynomial $p_D(x) = x^n + \delta_{n-2}x^{n-2} + \cdots + \delta_1x + \delta_0$, Graham and Lovász in 1978 conjectured that the sequence $\{(-1)^{n-1}\delta_k/2^{n-k-2}\}_{k=0}^{n-2}$ is unimodal. In this talk we present a proof for this conjecture. This is joint work with A. Abiad, Z. Berikkyzy, L. Hogben, F. H. J. Kenter, J. C.-H. Lin, and M. Tait. (Received September 18, 2015)