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The Maximum Modulus of an Independence Root

The *independence polynomial* of a graph is the generating polynomial for the number of independent sets of each size. Its roots are called *independence roots*. In this talk we will bound $\max\text{mod}(n)$, the maximum modulus of an independence root over all graphs on n vertices, and $\max\text{mod}_T(n)$, the maximum modulus of an independence root over all trees on n vertices. We will show that both values are exponential in n . More precisely, we show

$$\frac{\log_3(\max\text{mod}(n))}{n} = \frac{1}{3} + o(1) \quad \text{and} \quad \frac{\log_2(\max\text{mod}_T(n))}{n} = \frac{1}{2} + o(1).$$

This is a joint work with Jason Brown.