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Michael Tait*, 5000 Forbes Ave, Pittsburgh, PA 15213. *Using random polynomials in extremal graph theory.*

For a fixed integer k we consider the problem of how many edges may be in an n -vertex graph where no pair of vertices have t internally disjoint paths of length k between them. When $t = 2$ this is the notorious even cycle problem. We show that such a graph has at most $c_k t^{1-1/k} n^{1+1/k}$ edges, and we use graphs constructed via random polynomials to show that the dependence on t is correct when k is odd.

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