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Professor Paul S. Wang
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Dear Paul,

I just came across your paper from 1993 written with Beauzamy and Trevisan. What a beautiful way to reduce the coefficient bound!

Has anybody resolved the question you stated at the conclusion of that paper? It is certainly tantalizing. I think I see how to prove it impossible for polynomials that are products of two irreducible factors having at most three nonzero terms each, but that is of course only a small handful of cases.

I want to publicize this open problem in the next edition of *Seminumerical Algorithms*. I'll give it a rating > 45 unless you tell me it has already been solved.

Of course your new bound on coefficients is sometimes even smaller than $|f|_\infty$. Otherwise β would always be equal to $2b\,\mathrm{lc}(f)$ in step F5 on page 408. So in one sense the open question is purely academic. Still it is clean and nice.

Cordially,

Donald E. Knuth

Donald E. Knuth
Professor

DEK/pw

P.S. If I understand your paper—and I admit that this is a risky hypothesis—I think you meant to say 'c' instead of '$2c$' in step F4.

P.P.S. The proofs in your paper support a slightly better bound, because Musser's degree consistency algorithm gives a limited set of possible degrees for the factors. Instead of $n!^{1/4}/(n/4)!$ in Theorem 1(b), you can use the maximum over admissible d of $n!^{1/4}/(d/2)!^{1/2}\big((n-d)/2\big)!^{1/2}$. This is always at least as good, and it's often a lot better.