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Becker's conjecture on Mahler functions

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In 1994, Becker conjectured that if $F(z)$ is a k-regular power series, then there exists a k-regular rational function $R(z)$ such that $F(z)/R(z)$ satisfies a Mahler-type functional equation with polynomial coefficients where the initial coefficient satisfies $a_0(z) = 1$. In this work, we prove Becker's conjecture in the best possible form; we show that the rational function $R(z)$ can be taken to be a polynomial $zQ(z)$ for some explicit non-negative integer and such that $1/Q(z)$ is k-regular. (This is joint work with Jason P. Bell, Michael Coons, and Philippe Dumas.)

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