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Mean Values of Long Dirichlet Polynomials with Higher Divisor Coefficients

Assuming a conjectural formula for a certain family of additive divisor sums, we prove an asymptotic formula for mean values of long Dirichlet polynomials with higher order shifted divisor functions as coefficients. This establishes a conjecture of Coney-Keating under the assumption of an additive divisor conjecture. As a consequence, we prove a special case of a conjecture of Conrey-Gonek when the additive divisor conjecture is known. This is joint work with Nathan Ng.