



Mathematics > Combinatorics

The leading root of the partial theta function

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I study the leading root $x_0(y)$ of the partial theta function $\Theta_0(x,y) = \sum_{n=0}^{\infty} x^n y^{\lfloor n(n-1)/2 \rfloor}$, considered as a formal power series. I prove that all the coefficients of $-x_0(y)$ are strictly positive. Indeed, I prove the stronger results that all the coefficients of $-1/x_0(y)$ after the constant term 1 are strictly negative, and all the coefficients of $1/x_0(y)^2$ after the constant term 1 are strictly negative except for the vanishing coefficient of y^3 .

Comments: LaTeX2e, 22 pages including one Postscript figure. Version 2 includes a few new brief remarks; published in *Advances in Mathematics*

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