

## A NEW LEHMER PAIR OF ZEROS AND A NEW LOWER BOUND FOR THE DE BRUIJN-NEWMAN CONSTANT $\Lambda^*$

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*Dedicated to Wilhelm Niethammer on the occasion of his 60th birthday.*

**Abstract.** The de Bruijn-Newman constant  $\Lambda$  has been investigated extensively because the truth of the Riemann Hypothesis is equivalent to the assertion that  $\Lambda \leq 0$ . On the other hand, C. M. Newman conjectured that  $\Lambda \geq 0$ . This paper improves previous lower bounds by showing that

$$-5.895 \cdot 10^{-9} < \Lambda.$$

This is done with the help of a spectacularly close pair of consecutive zeros of the Riemann zeta function.

**Key words.** Lehmer pairs of zeros, de Bruijn-Newman constant, Riemann Hypothesis.

**AMS subject classifications.** 30D10, 30D15, 65E05.

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