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Akil Narayan* (anaray@dam.brown.edu), Division of Applied Mathematics, Box F, 182 George Street, Providence, RI 02912. *Jacobi-Gauss quadrature and near-optimal Lebesgue constants*. Preliminary report.

The $O(\log N)$ asymptotic value of the Lebesgue Constant for polynomial interpolation on a finite interval has been well-established. However, the search for nodal sets that minimize the Lebesgue Constant is still ongoing. In particular, the Chebyshev nodal set is known to have near-optimal Lebesgue Constant. In this work we present findings that indicate that the Gauss quadrature nodes associated with particular classes of Jacobi polynomials are markedly closer to Lebesgue-optimal than the Chebyshev nodes. Furthermore, we present an $O(N^2)$ algorithm (which involves the Golub-Welsch Gauss quadrature algorithm) for determining these nodes given N . (Received September 16, 2008)