1096-11-2371 **Hugh L. Montgomery*** (hlm@umich.edu), Department of Mathematics, University of Michigan, 530 Church Street, Ann Arbor, OH 48109-1043, and **Steven M. Gonek**. *Large values of the zeta function at critical points.* Preliminary report.

Throughout, let $\rho' = \beta' + i\gamma'$ denote a zero of $\zeta'(s)$. Assuming the Riemann Hypothesis, we show that if $\beta' \geq 1$ and $4 \leq T \leq \gamma' \leq 2T$, then $|\zeta(\rho')| \leq \frac{1}{2}e^{C_0} \log\log T + O(1)$ where C_0 is Euler's constant. We conjecture that if $\beta' \geq 1$ and $4 \leq T \leq \gamma' \leq 2T$, then $\zeta(\rho')| \leq \big(\frac{1}{4}e^{C_0} + o(1)\big) \log\log T$. For all $T \geq 4$ we show unconditionally that there exists a ρ' with $\beta' \geq 1$ and $T \leq \gamma' \leq 2T$ such that $|\zeta(\rho')| \geq \big(\frac{1}{8}e^{C_0} - o(1)\big) \log\log T$. The proof of this depends on a quantitative version of Kronecker's theorem for inhomogenious Diophantine approximation. (Received September 17, 2013)