1154-11-500 **Machiel van Frankenhuijsen*** (vanframa@uvu.edu), Utah Valley University, Mathematics, Orem, UT 84058. *Geometric Understanding of a Zero Free Region.*

That the Riemann zeta function does not vanish on the line $1 + i\mathbf{p}$ is equivalent to the prime number theorem. It follows from combining the Euler product with a positive function, and can be strengthened to yield a zero free region $\zeta(D + i\mathbf{p}) = 0$ implies $\frac{1}{1-D} \leq A + B \log \mathbf{p}$. Fractal geometry yields a deeper understanding inside the critical region $0 < D < 1$. We will discuss the latest work and possibilities for further research. (Received September 05, 2019)