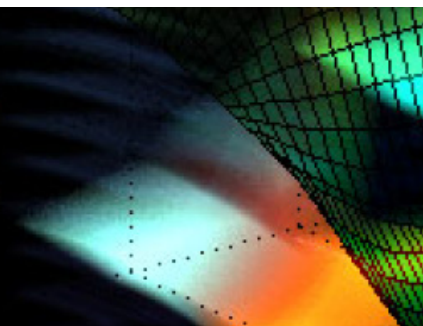




Department of  
**Mathematics &  
Statistics**



*Colloquium Talk* DAVID E BROWN **3:30, 12/2, BUS 116**

**RIEMANN'S ZETA AT EVEN POSITIVE INTEGERS**

$$1 + \frac{1}{2^2} + \frac{1}{3^2} + \frac{1}{4^2} + \cdots = \zeta(2) = \frac{\pi^2}{6} \quad 1 + \frac{1}{2^3} + \frac{1}{3^3} + \frac{1}{4^3} + \cdots = \zeta(3) = ??$$

ABSTRACT. *The Riemann Hypothesis* (RH) is the oldest of the seven Millennium Problems and, being a member of this group of problems, it enjoys a \$1,000,000 bounty. RH is a conjecture about the zeros of the analytic continuation of the function  $\zeta(s) = \sum_{n \geq 1} \frac{1}{n^s}$ , called the *Riemann Zeta* function. In

this talk, I intend to give a description of RH with the following promises: (1) It will illustrate the importance of RH with respect to Mathematics and the world writ large; (2) It will make clear the connections between the distribution of primes and the solution of RH; (3) It will be understandable to a high school student.

I will also evaluate  $\zeta(s)$  for  $s$  an even positive integer. Exact calculation of  $\zeta(s)$ , where  $s$  is an odd positive integer, is an open problem.