1154-VC-1177 **Steven M Deckelman*** (deckelmans@uwstout.edu), Department of MSCS, University of Wisconsin-Stout, Menomonie, WI 54751. *The Quantum Mechanical Approach to the Riemann Hypothesis.* Preliminary report.

Is there a physical reason the Riemann hypothesis should be true? *Interdisciplinary mathematics* is often thought of in terms of applications of mathematics to other disciplines. This talk will go in the converse direction highlighting an example where quantum physics has the potential to inform the Riemann hypothesis. In 1914 George Pólya suggested that one possible physical approach to the Riemann hypothesis would be to find a physical problem for which the imaginary parts of the nontrivial zeros of the zeta function were so connected with the physical problem that the Riemann hypothesis would be equivalent to the fact that all the eigenvalues of the physical problem be real. In the decades that followed, quantum mechanics became a natural reservoir to search for such physical problems because it is replete with (unbounded) self-adjoint operators (whose eigenvalues are always real) which model quantum observables. Over time this problem became known as the Hilbert-Pólya conjecture. In recent years, a flurry a popular media and blog articles have appeared, some sensationalizing quantum mechanics as a breakthrough approach to proving the Riemann hypothesis, with others being more cautiously optimistic. This talk will explain some of the ideas to non-experts. (Received September 13, 2019)