

1176-33-154

**Tamar Friedmann\*** (tfriedma@colby.edu) and **Quincy Webb**. *Euler's reflection formula and the spectrum of the Hydrogen atom.*

In this talk, we show how to obtain Euler's reflection formula for reciprocals of positive even integers from a variational computation of the spectrum of the Hydrogen atom. We also obtain infinite product formulas for various combinations of gamma functions. A prior derivation (by Friedmann and Hagen) of the Wallis formula for  $\pi$  becomes a special case of the work presented here. We explain how Bohr's correspondence principle allows us to carry out our derivations without the need for the limit definition of the gamma function. (Received January 20, 2022)