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Amy T DeCelles* (adecelles@stthomas.edu). *Zeros of Zeta Functions and Eigenvalues of Pseudo-Laplacians.*

The occurrence of zeros of the Riemann zeta function in a list (Haas, 1977) of parameter values $\{s : \lambda_s = s(s-1)\}$ for purported eigenvalues λ_s of the Laplacian on $SL_2(\mathbb{Z}) \backslash \mathfrak{H}$ raised hopes that a proof of the Riemann Hypothesis might be within reach, prompting a flurry of activity, trying first to reproduce, then correct or modify Haas' results. Although Hejhal showed that Haas' methods were flawed, the intriguing fact that his error would produce exactly the zeros of zeta led to related investigations (Hejhal, 1981, Colin de Verdière 1981 and 1983.) Recent work of Garrett and Bombieri sheds light on the previously hidden difficulties inherent this approach, opening the door to new constructions which avoid these difficulties. We will discuss some of these new constructions. (Received July 28, 2014)