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Amanda Folsom* (folsom@math.wisc.edu), Department of Mathematics, University of Wisconsin, Madison, 480 Lincoln Drive, Madison, WI 53706. *Half-integral weight Maass form correspondences and vector valued forms.*

Recent celebrated works of Zagier and Bringmann-Ono have placed the mock Θ -functions and their generalizations in the context of weight $\frac{1}{2}$ harmonic weak Maass forms. In light of this, one expects similar correspondences to hold between other spaces of half-integral weight Maass forms, however missing are natural candidates to serve as analogues to the mock Θ -functions. In separate works with Bringmann-Ono and Bruinier-Bringmann-Ono, we make such correspondences precise by constructing half-integral weight vector valued harmonic weak Maass forms on the full modular group $SL_2(\mathbb{Z})$ whose transformation properties are dictated by the Weil representation arising from elementary theta series. We show that these vector valued Maass forms give rise to certain families of hypergeometric series and also Borcherds products. In both cases we establish an isomorphism between spaces of half-integral weight Maass forms and classical spaces of half-integral weight modular forms. (Received September 19, 2007)