1106-11-839 **Luca Candelori*** (lcandelori@lsu.edu). *An algebro-geometric theory of vector-valued modular forms of half-integral weight attached to Weil representations.*

In this work we give a geometric theory of vector-valued modular forms attached to Weil representations of rank 1 lattices. More specifically, we construct vector bundles $\mathcal{V}_{m,k}$ over the moduli stack $\mathcal{M}_1$ of elliptic curves, whose sections over the complex numbers give weight $k + 1/2$ vector-valued modular forms attached to rank 1 lattices with quadratic form $x \mapsto mx^2/2$, for $m \in 2\mathbb{Z}_{>0}$. The key idea is to construct vector bundles of Schrödinger representations and line bundles of half-forms over appropriate 'metaplectic stacks', which are μ_2-gerbes over $\mathcal{M}_1$, and then show that their tensor products $\mathcal{V}_{m,k}$ descend to $\mathcal{M}_1$. We then extend the bundles $\mathcal{V}_{m,k}$ to the cusp ∞ and give an algebraic notion of q-expansions of vector-valued modular forms. We define holomorphic vector-valued modular forms and cusp forms and compute algebraic dimension formulas for these spaces over any algebraically closed field of characteristic $\neq 2, 3$, by using the Riemann-Roch theorem for DM stacks. Finally, by specializing the theory to the case $m = 2$, we obtain an algebro-geometric theory of modular forms of half-integral weight, as defined in the complex-analytic case by Shimura. (Received September 07, 2014)