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Geoff Mason* (gem@cats.ucsc.edu). *The module of vector-valued modular forms on $SL(2, Z)$.* Preliminary report.

For an arbitrary finite-dimensional complex representation $\rho : SL(2, Z) \rightarrow GL(p, C)$ of the modular group, let $F(\rho)$ and $H(\rho)$ be the corresponding Z -graded spaces of holomorphic and almost holomorphic vector-valued modular forms respectively on $SL(2, Z)$. We will discuss the functorial nature of the associations $\rho \mapsto F(\rho)$ and $\rho \mapsto H(\rho)$, and explain that $H(\rho)$ is a Noetherian module over the ring of classical modular forms. Time permitting, we discuss connections with differential operators and present some illustrative examples. (Received July 25, 2007)