1131-11-211   **Richard Gottesman*** (`richard.b.gottesman@gmail.com`) and **Geoff Mason** (`gem@ucsc.edu`).
Vector Valued Modular Forms and Their Applications. Preliminary report.

Vector valued modular forms form a graded module over the ring of modular forms. The structure of the module of vector valued modular forms allows us to show that the component functions of vector valued modular forms are solutions to certain ordinary differential equations. In certain cases, we use Hauptmoduls and hypergeometric series to solve these differential equations. We then obtain the q-series expansions of vector valued modular forms. There are important applications to modular forms on non-congruence subgroups. (Received July 14, 2017)