

# GEOMETRICALLY PROVEN STRUCTURE THEOREMS FOR VECTOR VALUED SIEGEL MODULAR FORMS

THOMAS WIEBER

ABSTRACT. It is well known that  $\Gamma$ -invariant tensor fields on the Siegel upper halfplane can be viewed as vector valued Siegel modular forms with respect to this group  $\Gamma$ . We consider one of Igusa's subgroups for which the Satake compactification is the 3-dimensional projective space. After observing the tensors on the Satake compactification the structure theorem(s) and Hilbert function(s) for the representation  $\text{Sym}^2$  become rather evident.