

1117-20-34

Klaus Lux and **Nham V Ngo*** (nhamvongo@gmail.com), Department of Mathematics,
University of Arizona, Tucson, AZ 85721, and **Yichao Zhang**. *Cohomology of SL_2 and related structures*.

Let SL_2 be the rank one simple algebraic group defined over an algebraically closed field k of characteristic $p > 0$. In this talk we present a new method for computing the dimension of the cohomology spaces $H^n(SL_2, V(m))$ for Weyl SL_2 -modules $V(m)$ using cohomology of Frobenius kernels. Various results are then obtained for extension spaces $\text{Ext}_{SL_2}^n(V(m_2), V(m_1))$ between Weyl modules $V(m_1)$ and $V(m_2)$. Finally, we give explicit upper bounds for the cohomology dimensions of SL_2 and the finite Chevalley group $SL_2(p^s)$ with coefficients in simple modules. (Received December 18, 2015)