1023-11-1542   **Chieh-Yu Chang** (`d917202@oz.nthu.edu.tw`), Department of Mathematics, National Tsing-Hua University, Hsin-Chu, 300, Taiwan, and **Matthew Papanikolas*** (`map@math.tamu.edu`), Department of Mathematics, Texas A&M University, College Station, TX 77843. *Galois groups of difference equations and algebraic relations among periods of Drinfeld modules.* Preliminary report.

In this talk we will present recent results on algebraic independence over function fields. Transcendence theory for Drinfeld modules enjoys a rich history going back to Carlitz and Wade in the 1930's and 1940's. Work of Brownawell, Thakur, Yu, and others, since the 1980's has demonstrated that analytic function theory can successfully be brought to bear on such problems.

By introducing a Tannakian formalism for Drinfeld modules and relating it to the Galois theory of certain Frobenius difference equations, we determine the transcendence degrees of fields generated by periods and quasi-periods of Drinfeld modules and more generally Anderson t-modules. More precisely, we show that the transcendence degree of the period matrix of a Drinfeld module is equal to the dimension of its Galois group. We will discuss certain Galois group calculations and their applications to Carlitz logarithms, zeta values, and periods of Drinfeld modules. (Received September 26, 2006)