GERALD CLIFF, University of Alberta, Dept. of Math. & Stat. Sci., Edmonton, AB T6A 0M2
Realizing the local Weil representation over a number field

Let K be a nonarchimedian local field whose residue field has $q = p^m$ elements. Let W be the Weil representation of the symplectic group $\mathrm{Sp}(2n, K)$. We show that W, considered either as a projective representation of $\mathrm{Sp}(2n, K)$ or a representation of the metaplectic group $\mathrm{Mp}(2n, K)$, has a model defined over the field $Q[\sqrt{p}, \sqrt{-p}]$. We use the Schrödinger model of the Heisenberg group, having W act on locally constant, compactly supported complex functions $S(Y)$ on an n-dimensional K space Y. We replace $S(Y)$ by E-valued functions (still locally constant, of compact support) on Y, where E is the field obtained from Q by adjoining all p-power roots of unity. (This is in the case that the characteristic of K is 0.) Then we use Galois cohomology. As an application, we show that the local theta correspondence can also be defined for representations over a number field of a dual reductive pair.

This is joint work with David McNeilly, also of the Unversity of Alberta.