**An analog of the Hasse-Davenport product relation for $\epsilon$-factors and an application**

The classical Hasse-Davenport product relation is an identity involving products of Gauss sums defined over a finite field. In this talk we shall introduce some generalizations of this classical result for Tate $\epsilon$-factors and closely related arithmetic factors defined over a p-adic field. We will then show that these generalizations are equivalent to a certain representation-theoretic identity involving an analog of Shahidi local coefficients for covering groups.