1086-11-437 **Sungmun Cho*** (`moonigmi@gmail.com`), 567 Lake Hall, 360 Huntington Avenue, Boston, MA 02115. *Group schemes and local densities of quadratic lattices in residue characteristic 2.*

The celebrated Smith-Minkowski-Siegel mass formula expresses the mass of a quadratic lattice $(L, Q)$ as a product of local factors, called the local densities of $(L, Q)$. This mass formula is an essential tool for the classification of integral quadratic lattices. In this talk, I will explain the local density formula by observing the existence of a smooth affine group scheme $\underline{G}$ over $\mathbb{Z}_2$ with the generic fiber $\mathrm{Aut}_{\mathbb{Q}_2}(L, Q)$, which satisfies $\underline{G}(\mathbb{Z}_2) = \mathrm{Aut}_{\mathbb{Z}_2}(L, Q)$. This method works for any unramified finite extension of $\mathbb{Q}_2$. Consequently, This provides the long awaited proof for the local density formula of Conway and Sloane and its generalization to unramified finite extensions of $\mathbb{Q}_2$. As an example, I give the mass formula for the integral quadratic form $Q_n(x_1, \cdots, x_n) = x_1^2 + \cdots + x_n^2$ associated to a number field $k$ which is totally real and such that the ideal (2) is unramified over $k$. (Received September 01, 2012)