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The Steinberg lattice of a finite Chevalley group and its modular reduction

The talk will review a paper by R. Gow and touch upon a minor contribution by the speaker.

Let $G = G(\Phi, F_q)$ denote the finite Chevalley group associated to an indecomposable root system Φ over a finite field F_q of characteristic p. In 1957 R. Steinberg constructed a minimal left ideal I of the integral group algebra $\mathbf{Z}G$ possessing some remarkable properties. One of these is that I is a free $\mathbf{Z}$-module whose rank is the p-part of $|G|$; this gives rise to an integral matrix representation of G, which viewed as a complex representation is irreducible. Gow studies what happens to this matrix representation when it is reduced modulo a prime. Our contribution occurs when Φ is of type $\mathbf{C}_n$ and the reduction is modulo 2.