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Arithmetic Springer Theorem on Quadratic Forms under Field Extensions of Odd Degree

In this talk, we'll explain the following theorem which can be regarded as arithmetic Springer theorem for quadratic forms under field extensions of odd degree.

Theorem. Suppose f and g are integral quadratic forms over $\mathbf{Z}$ and f is indefinite. If g is not represented by f over $\mathbf{Z}$, then g cannot represented by f over any ring of integers of number field of odd degree.

Fortunately Theorem cannot be true when f is a definite quadratic form in general.

Reference: J. S. Hsia, Y. Y. Shao and F. Xu, Representations of indefinite quadratic forms, J. reine und angew. Math. 494(1998), 129-140.