Title:	Some invariants of fields and quadratic forms
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Abstract:	This thesis aims at being a detailed exposition of the algebraic theory of quadratic forms. Chapter 1 contains the foundations of quadratic forms. It starts with the definition of a quadratic form as a quadratic space equipped with a symmetric bilinear map and ends with the construction and computation of Witt ring of fields. Chapter 2 and Chapter 3 is a study of quadratic forms over local fields(Q p) and how information gained in the local context can help us to understand quadratic forms over global fields (Q). The Hasse-Minkowski theorem is in the heart of this theory. In order to understand function fields of quadratic forms, we need a good grasp of how quadratic forms behave under both transcendental and algebraic extensions. This is covered in detail in Chapter 4 of the thesis. The Chapter 5 introduces the concept of Pfister forms and Pfister neighbours which is very important for our study of field invariants done in Chapter 6. In this chapter, we study mainly two questions. Given q and φ , two regular quadratic forms, firstly what is the characterization of q such that q is isotropic(or hyperbolic) over function field of a fixed φ ? Secondly, what is the characterization of φ such that q is isotropic (or hyperbolic) over function field of φ where q is fixed? Although these questions are open for the general case but results have been obtained for special cases . Chapter 6 is an introduction to the interesting topic of field invariants. In this thesis, we have dealt with only some of the field invariants like Level of a field, Pythagoras number and u-invariant of a field. Along with computations of these invariants for some fields, we studied the basic properties of those field invariants giving us many interesting and important results. The last chapter, i.e Chapter 7 is an exposition of a paper titled ” Pythagoras number of fields” authored by Detlev Hoffman. It contains an interesting result which says: For a formally real field F and an integer n ≥ 1, there exist a formally real field F ′ over F with P(F) = n. The proof critically uses the concept of Pfister neighbours and function fields of quadratic forms
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