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Title:	Central Simple Algebras and Derivations
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Abstract:	It is well known that central simple algebras are split by suitable finite Galois extensions of their centers. A counterpart of this result was studied in the set up of differential matrix algebras, wherein Picard-Vessiot extensions that split matrix differential algebras were constructed in 2007, by Juan and Magid. In this thesis, we exhibit instances of differential matrix algebras which are split by finite extensions. In some cases, we relate the existence of finite splitting extensions of a differential matrix algebra to the triviality of its tensor powers, and show in these cases, that orders of differential matrix algebras divide their degrees. In many cases, we also provide sharp lower bounds on transcendence degree of splitting fields of differential matrix algebras which are not split by any finite extension. In the last chapter of the thesis, we use derivations to iteratively generate Faddeev inequivalent division algebras over function fields in one variable. Our intent of doing so is a future exploration, where we wish to see if Brauer groups of function fields could be generated iteratively using derivations on fields.
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