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Special Eisenstein Polynomials generating Totally Ramified Extensions of a p -adic Field.

In this seminar, we will present a few algorithms for working with extensions of a p -adic field K . A reduction algorithm will be presented, such algorithm allows to transform any Eisenstein polynomial into a special polynomial. Each totally ramified extension is generated by at least one special polynomial, and the number of special polynomials generating the extension L/K is at most the number of different conjugate fields of L/K , and in particular it is unique for Galois extensions. Studying the reduction procedure, we obtain a criterion that allows sometimes to guarantee that two polynomials generate non-isomorphic extensions. We will describe an algorithm that allows to construct the special polynomial generating a totally ramified class field, given a suitable description of the norm group. Finally, we will present a result on the characterization of coefficients of Eisenstein polynomials of degree p^2 with prescribed Galois group, over an unramified p -adic field. (Received September 22, 2014)