DEFECT EXTENSIONS OF PRIME DEGREE

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The investigation of valued fields and related areas has shown the importance of a better understanding of the structure of defect extensions of valued fields. Ramification theoretical methods show that a central role in the issue of defect extensions is played by towers of Galois defect extensions of prime degree. In the case of valued fields of positive characteristic, a useful tool in the study of defect extensions is a classification of Galois defect extensions of prime degree. This classification turned out to be crucial for a handy characterization of defectless fields, that is, valued fields admitting no extensions with nontrivial defect.

We introduce a classification of Galois defect extensions of prime degree in the mixed characteristic case and show analogies between the classifications in the mixed and the equal positive characteristic case. In particular, we relate both classifications of Galois defect extensions of prime degree with higher ramification groups and traces of these extensions. We show that properties of certain classes of defect extensions in the positive characteristic case, important for the characterization of defectless fields, hold also for the corresponding classes in the mixed characteristic case.

This is joint work with Franz-Viktor Kuhlmann.