

On the Galois module structure of integers of p -adic fields. The question of the minimal index

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Let L/K be a Galois extension with Galois group G . The Normal Basis Theorem shows that L is a free $K[G]$ -module of rank 1. When L/K is a number field or a local field extension, it is natural to consider the question of determining the structure of the ring of integers \mathcal{O}_L as a $\mathcal{O}_K[G]$ -module. It is well-known that \mathcal{O}_L contains free $\mathcal{O}_K[G]$ -submodules of finite index, but, in general, it is not free.

In this talk, after a brief overview of the main classical results in this context, I will present some recent results on the minimal index of a free $\mathcal{O}_K[G]$ -submodule into \mathcal{O}_L , in the case of p -adic fields.