Polynomial Dedekind domains with finite residue fields of prime characteristic

Giulio Peruginelli

In this talk we describe the family of Dedekind domains R with finite residue fields of prime characteristic contained between the polynomial rings $\mathbb{Z}[X]$ and $\mathbb{Q}[X]$. We show that such a domain R is equal to a generalized ring of integer-valued polynomials, that is, for each prime p there exists a finite subset E_p of the absolute integral closure $\overline{\mathbb{Z}_p}$ of the ring of p-adic integers $\mathbb{Z}_p$ such that $R = \{f \in \mathbb{Q}[X] \mid f(E_p) \subseteq \overline{\mathbb{Z}_p}, \forall \text{ prime } p \in \mathbb{Z}\}$. We characterize the class group of R as the direct sum of a countable family of finitely generated abelian groups. Conversely, we prove that any group of this kind occurs as the class group of a Dedekind domain between $\mathbb{Z}[X]$ and $\mathbb{Q}[X]$, giving a positive answer to a recent question raised by G. W. Chang.

gperugin@math.unipd.it

University of Padova, Department of Mathematics
Via Trieste 63
35128 Padova
Italy