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Frobenius Galois Rings and Corings

Brzeziński observed that the language of corings can be applied to give a unified approach to Galois theories that existed in the literature, such as Galois theory for field and commutative ring extensions with action by a finite group, Hopf-Galois theory, Galois theory for entwining structures and others. In view of duality, the theory becomes more elegant if we consider an coring that is finitely generated and projective over the base ring. However, the nicest situation is when the coring is Frobenius (that is, it is a Frobenius monoid in the category of bimodules). For instance, we do not need flatness assumptions in order to have a structure theorem. For example, the coring that is needed in order to describe Galois theory for commutative ring extensions with a finite group action (or even a finite partial group action or a partial finite groupoid action is Frobenius. The aim of this talk is develop a streamlined theory, based on the notions of Frobenius pairs and Frobenius monads in 2-categories.