The Miyashita-Ulbrich action for weak Hopf algebras

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In this talk we show that for every weak Galois extension $B \hookrightarrow A$ associated to a weak Hopf algebra in a symmetric closed category with equalizers and coequalizers, the centralizer of B in A, denoted by $C_A(B)$, is a H-module algebra and a Yetter-Drinfeld module via the so-called Miyashita-Ulbrich action. We also prove that there exists a lax monoidal functor $C_-(B) : {}_A\mathcal{M}_A \to \mathcal{M}_H$ with factorization through the category ${}_{C_A(B)}(\mathcal{M}_H)$ (i.e., the category of relative Hopf modules) and we obtain explicitly the form of the Miyashita-Ulbrich action when we work with weak H-cleft extensions. If the functor $-\otimes H$ preservers equalizers, we show that there exists a lax monoidal functor $Y C_-(B) : {}_A(\mathcal{M}^H)_A \to \mathcal{YD}_H^H$ generalizing the result obtained by Peter Schauenburg in [4]. As a consequence, if the antipode of H is an isomorphism, using the results proved in [2] we obtain that every weak H-Galois extension gives rise a non-trivial weak Yang-Baxter operator (see [2] and [1] for the definition and properties). Finally, we prove that $C_A(B)$ is a commutative algebra in $\mathcal{YD}_H^H$ and the functor $Y C_-(B)$ factors through the category ${}_{C_A(B)}(\mathcal{YD}_H^H)$.

Bibliography

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