On étale algebraic homomorphisms

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In the category ${\text{CompHaus}}$ of compact Hausdorff spaces and continuous maps, a map is exponentiable if, and only if, it is étale (see [1]). Briefly, to prove that étale continuous maps between compact Hausdorff spaces are exponentiable, Cagliari and Mantovani build exponentials in the quasitopos of pseudotopological spaces and show that the exponentials belong to $\text{CompHaus}$ whenever the map is étale. Using techniques developed in the study of lax algebras (see [4, 2, 3]), this can be generalized to any category $C^T$ of Eilenberg-Moore algebras for a monad $T$ on $\text{Set}$ satisfying the Beck-Chevalley condition (BC). Indeed, every such category can be embedded in a quasi-topos and it can be shown that exponentials of étale algebraic homomorphisms belong to $C^T$. In this talk I will outline this proof and discuss the role of (BC) in this context.

References


*Joint work with Dirk Hofmann and George Janelidze.*