F. Gavarini, *"A global version of the quantum duality principle"*
Czechoslovak Journal of Physics **51** (2001), no. 12, 1330–1335.

ABSTRACT

The "quantum duality principle" states that a quantization of a Lie bialgebra provides also a quantisation of the dual formal Poisson group and, conversely, a quantisation of a formal Poisson group yields a quantization of the dual Lie bialgebra as well. We extend this to a much more general result.

Namely, for any principal ideal domain R, and for each prime $p \in R$, we establish an "inner" Galois' correspondence on the category $\mathcal{HA}$ of torsionless Hopf algebras over R, given by two functors from $\mathcal{HA}$ to itself. The image of the first, resp. the second, functor is the full subcategory of those Hopf algebras which are commutative, resp. cocommutative, modulo p; in other words, they are *"quantum function algebras" (=QFA)*, resp. *"quantum universal enveloping algebras" (=QUEA)*, at p. In particular, we provide a machine to get two quantum groups — a QFA and a QUEA — out of *any* Hopf algebra H over a field k: just apply the functors to $k[\nu] \otimes_k H$ for $p = \nu$.

A relevant example occurring in quantum electro-dynamics is studied in some detail.

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