

F. Gavarini, “*The quantum duality principle*”

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ABSTRACT

The “quantum duality principle” states that the quantization of a Lie bialgebra — via a quantum universal enveloping algebra (in short, QUEA) — also provides a quantization of the dual Lie bialgebra (through its associated formal Poisson group) — via a quantum formal series Hopf algebra (QFSHA) — and, conversely, a QFSHA associated to a Lie bialgebra (via its associated formal Poisson group) yields a QUEA for the dual Lie bialgebra as well. More in detail, the principle claims that there exist functors $QUEA \rightarrow QFSHA$ and $QFSHA \rightarrow QUEA$, inverse to each other, such that in both cases the Lie bialgebra associated to the target object is the dual of that of the source object. Such a result was claimed true by Drinfeld, but seems to be unproved in the literature: I give here a thorough detailed proof of it, in a slightly stronger version.

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