QUANTIZATION AS MAPPING AND AS DEFORMATION

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Since the discussed topic already exists in a printed form (see [1],[2]) we present here only a brief summary.

In the paper, first, classes of quantizations as classes of maps from classical to quantum observables were discussed. More precisely the classes of all quantizations of polynomial observables for a system of one degree of freedom were classified. This is not too restrictive since the derived results can be generalized to several degrees of freedom in a straightforward way and since for an irreducible representation of Q and P by self-adjoint operators $\hat{Q}$ and $\hat{P}$ in $L^2(R)$ any self-adjoint operator in $L^2(R)$ can be approximated (in the sense of a strong resolvent convergence) by the self-adjoint closures of polynomials in $\hat{Q}$ and $\hat{P}$.

Secondly, the approach in which quantization was defined as deformation of the algebra of classical observables into the algebra of quantum observables was reviewed. Finally, a brief comparison of both quantization approaches was given. In particular, the $*$-products corresponding to the translationally invariant quantization maps were determined.

[1] Niederle J., in Proc. of the Colloquium on Mathematical Physics. Istanbul. 1979 (see also ICTP preprint IC/79/140, 1979).

[2] Niederle J., Tolar J., Czech. J. Phys. B29 (1979), 1358.