

## Quantization, spatiotemporalization and pure variation

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Understand the intrinsic physical meaning of quantum formalism leads ontologically to admit that one fundamental side of reality is purely contradictory, irreducibly random, objectively indeterminate and intrinsically independent of relativistic space-time. It means also that physical reality has another fundamental side, i.e. space-time, and that both are irreducible to each other. Quantum reality, discretized by the Planck constant, assume coherent states and partially ordered variables (that are commutative or not), while on the other side, relativistic space-time, structured by the speed of light, assume coherent variables and partially ordered states (that are causally related or not).

From this point of view, fields would be only a derived mixture of these two sides. But quantum reality and relativistic space-time seem to be mixed in two kinds of fields themselves irreducible to each other. If, on one hand, quantum field theory has already formalized the way that quantum reality locates, evolves and interacts on a relativistic background, on the other hand, quantum gravity tends to formalize the way that smooth and causally ordered space-time emerges on a quantum background. But no unification of the two fundamental sides of reality must be waited at this derived level. Unification could perhaps intervene only upstream, in a pure variation preceding and underlying its double distinction in variables and states of variation, i.e. its quantization or its localization and their derived mixtures.

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