

Covariance and quantum logic

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Abstract

Considering the fundamental role symmetry plays throughout physics, it is remarkable how little attention has been paid to it in the quantum-logical literature (exceptions include [1] and [2]). In this talk, I'll discuss G -test spaces – that is, test spaces hosting an action by a group G – and their logics. In particular, we'll look at G -test spaces having the property that (i) all tests have a common cardinality, and (ii) any bijection between two tests is implemented by an element of G . Example: the frame manual of a Hilbert space, with G the corresponding unitary group. After stating some general results and exhibiting various specimens (some of them exotic), I'll present a canonical construction whereby a test space, symmetric under the action of a group H , can be enlarged to support an action by a larger group. This construction includes, as a special case, the induced test spaces constructed in [1] and [3], and also, in the case where the initial test space is classical, the construction of symmetric test spaces discussed in [4].

References

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- [4] Wilce, A., Symmetry and Topology in Quantum Logic, *Int. J. Theor. Physics* 2005.