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Conformal subnets and compact hypergroups. Preliminary report.

Given a rational chiral conformal field theory A it is well understood how to obtain extensions $B \supseteq A$. Namely, they arise from commutative algebras in $\text{Rep}(A)$. The converse problem of characterizing subtheories $B \subseteq A$ with the same Virasoro symmetry seems harder. One gets examples by taking fixed points A^G under the action of a subgroup G of the automorphism group of A . But it is well-known that many examples are not of this form.

In the framework of local conformal nets, we propose a notion of a “quantum operation” on a conformal net A which generalize the one of an automorphism of A . We show that taking fixed points under a set of quantum operations gives a conformal subnet $B \subseteq A$. Conversely, we show that for any “discrete” subnet $B \subseteq A$ the quantum operations fixing the B form a compact hypergroup whose fixed point is exactly B . (Received September 16, 2019)