

Mixed States in Topological Quantum Computing

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[WORK: Add a little appendix explaining partial measurement graphically, with a special focus on the example of the quantum double. Mention mixed state TQFTs in passing [ZW21] - we can really say that the TV construction is the quantum double of the RT construction, as said in the last paragraph of his paper.]

[WORK: I'm realizing I don't know what "states" look like in MTCs. For TQFTs you can do state sum stuff so it makes sense, but for MTCs you can't really. What does make sense is maps which behave like density matrices, i.e., mixed state looking things. Maybe these are states? Maybe pure states are special subsets of this? This is something to ask zhenghan.]

[WORK: Is there a good sense in which I can say that spherical categories are "Mixed state" MTCs?]

References

[ZW21] Modjtaba Shokrian Zini and Zhenghan Wang. Mixed-state tqfts. *arXiv preprint arXiv:2110.13946*, 2021.