

String diagrams for traced and compact categories are oriented 1-cobordisms

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Abstract. We will present an alternate conception of string diagrams as labeled 1-dimensional oriented cobordisms, the operad of which we denote by \mathbf{Cob}/\mathcal{O} , where \mathcal{O} is the set of string labels. The axioms of traced (symmetric monoidal) categories are fully encoded by \mathbf{Cob}/\mathcal{O} in the sense that there is an equivalence between \mathbf{Cob}/\mathcal{O} -algebras, for varying \mathcal{O} , and traced categories with varying object set. The same holds for compact (closed) categories, the difference being in terms of variance in \mathcal{O} . Time permitting, we will give a characterization of the 2-category of traced categories solely in terms of those of monoidal and compact categories, without any reference to the usual structures or axioms of traced categories.

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