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Twisted Double Functors

A twisted double functor between strict double categories is a lax double functor on the transpose of the source double category. This, together with our canonical examples, inspires a new definition of a "twisted double functor" between double categories that interchanges loose and tight structures as it makes its assignments from source to target. This talk will introduce this new notion and illustrate it by examples. Particularly, a profunctor-valued "twisted hom" functor can be associated to any double category. This packages the loose structure of the represented double category and is naturally twisted in our sense. By precomposition with a point, any such twisted hom functor gives rise to the further example of a canonical twisted representable. Finally, we will also discuss examples of adjunction-valued twisted double functors arising from doctrines and bi-indexed categories. This is a report on joint work with Evan Patterson and David Jaz Myers.