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**Santosh Kandel\***, Department of Mathematics 255 Hurley, University of Notre Dame, Notre Dame, IN 46556. *Construction of a Functorial Euclidean QFT*. Preliminary report.

A  $d$ -dimensional Functorial Euclidean Quantum Field Theory  $E$  associates to a closed oriented Riemannian manifold  $Y$  of dimension  $d - 1$  a Hilbert space  $E(Y)$  and to a bordism  $\Sigma$  from  $Y_1$  to  $Y_2$  (which is a compact oriented Riemannian manifold with boundary  $Y_2 \sqcup \bar{Y}_1$ ) a Hilbert-Schmidt operator  $E(Y_1) \rightarrow E(Y_2)$  so that gluing bordisms corresponds to composing the associated operators. If we forget the Riemannian structure on the  $Y$ 's and on the bordisms there are many examples of such theories which are known as Topological Quantum Field Theories. In this talk, we construct an example of Functorial Euclidean QFT when  $d$  is even. (Received September 17, 2013)