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Paul H Drube* (pdrube@math.uiowa.edu), 15 MacLean Hall, Department of Mathematics, University of Iowa, Iowa City, IA 52242-1419. *Diffeomorphism Invariants from Topological Quantum Field Theories.*

Associated with every two-dimensional TQFT is a field-valued diffeomorphism invariant of closed, oriented two-manifolds, which we interpret as a map from the natural numbers to the base field. We precisely characterize which such maps may be realized as the diffeomorphism invariant of some 2-D TQFT. Our characterization is closely related to the question of whether the Frobenius algebra underlying a given TQFT is equivalent to the algebra of all 2-D surfaces having the circle as their boundary (taken modulo local skein relations as well as surfaces that "evaluate similarly"). We precisely characterize the class of TQFTs satisfying this property, and demonstrate that the set of functions arising as the diffeomorphism invariants of such TQFTs have a particularly simple description. (Received September 22, 2010)