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Department of Mathematics & Statistics, Ottawa, Ontario K1N 6N5, Canada. *Twisted Frobenius  
extensions*.

Frobenius algebras are finite-dimensional unital associative algebras with a certain type of bilinear form giving the algebras nice duality properties. They are of vital importance in topological quantum field theory. Frobenius extensions are generalizations of Frobenius algebras, where one does not require the base ring to be a field. We will introduce an even more general concept, that of a twisted Frobenius extension, that involves automorphisms of the base ring and the extension. In the case that these automorphisms are trivial, we recover the usual notion of a Frobenius extension. The motivation for our definition comes from categorification, where one is often interested in the adjointness properties of induction and restriction functors. We show that  $A$  is a twisted Frobenius extension of  $B$  if and only if induction of  $B$ -modules to  $A$ -modules is twisted biadjoint to restriction of  $B$ -modules to  $A$ -modules. A large (non-exhaustive) class of examples is given by the fact that any time  $A$  is a Frobenius algebra and  $B$  is a subalgebra that is also a Frobenius algebra, then  $A$  is a twisted Frobenius extension of  $B$ . (Received January 12, 2015)