1145-57-972   **Margaret Nichols*** (`mnichols@math.uchicago.edu`). *Taut sutured handlebodies as twisted homology products.*

A basic problem in the study of 3-manifolds is to determine when geometric objects are of 'minimal complexity'. We are interested in this question in the setting of sutured manifolds, where minimal complexity is called 'tautness'.

One method for certifying that a sutured manifold is taut is to show that it is homologically simple - a so-called 'rational homology product'. Most sutured manifolds do not have this form, but do always take the more general form of a 'twisted homology product', which incorporates a representation of the fundamental group. The question then becomes, how complicated of a representation is needed to realize a given sutured manifold as such?

We explore some classes of relatively simple sutured manifolds, and see one class is always a rational homology product, but that the next natural class contains examples which require twisting. We also find examples that require twisting by a representation which cannot be 'too simple'. (Received September 17, 2018)