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Codimension one properly embedded surfaces as a (higher) category.

This is based upon joint work with Seiichi Kamada. A proof of the following (sort-of) classical result will be proven. A generic properly and smoothly embedding of a surface that has boundary corresponds to a globular composition of homogenous triple arrows in a 4-category that has two objects and back-and-forth non-identity arrows between them. Properly isotopic surfaces correspond to equivalent homogenous triple arrows in that 4-category. Moreover, given a globular composition of homogeneous triple arrows, a representative proper embedding can be constructed. Equivalent triple arrows give rise to properly isotopic surfaces. The construction of the category gives rise to a method of constructing higher dimensional versions thereof. In these relations among weakly equivalent (multi)-arrows correspond to embedded handles.

As one might expect, the talk will be replete with illustrations. (Received August 28, 2020)