1134-18-30 **K Courser*** (kcour001@ucr.edu). *A bicategory of coarse-grained Markov processes.* Preliminary report.

If C is a category with finite colimits, D is a symmetric monoidal category and F is a lax symmetric monoidal functor from C to D, Fong has developed a theory of F-decorated cospans which are suitable for representing open dynamical systems. Indeed, Fong has shown the existence of a symmetric monoidal category consisting of objects of C and isomorphism classes of F-decorated cospans in C as morphisms. One application of this result is given by Baez, Fong and Pollard in which they construct a symmetric monoidal category whose morphisms are given by isomorphism classes of open Markov processes. Using a result of Shulman, we present a symmetric monoidal bicategory consisting of finite sets as objects, open Markov processes as morphisms and coarse-grainings of open Markov processes as 2-morphisms. (Received June 25, 2017)