

1134-18-31 **Adam Yassine*** (ayass002@ucr.edu). *Open Systems in Classical Mechanics*. Preliminary report. Using the framework of category theory, we formalize the heuristic principles that physicists employ in constructing the Hamiltonians for open classical systems as sums of Hamiltonians of subsystems. First we construct a category where the objects are symplectic manifolds and the morphisms are spans whose legs are surjective Poisson maps. Using a slight variant of Fong’s theory of “decorated” cospans, we then decorate the apices of our spans with Hamiltonians. This gives a category where morphisms are open classical systems, and composition allows us to build these systems from smaller pieces. (Received July 09, 2017)