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Abstract Dynamical Systems.

We describe a categorical framework of modeling and analyzing systems in a broad sense. The latter can be thought of as ‘machines’ with inputs and outputs, carrying some sort of signal that occurs through some notion of time; special cases include discrete and continuous dynamical systems. Modeling them as algebras for the wiring diagram operad, a central goal is to understand the behavior of composite systems, formed as arbitrary interconnections of component subsystems. This shall be accomplished using lax monoidal functors, which provide a coherent formalization of systems, as well as sheaf theory, which captures the crucial notion of time. (Received June 29, 2017)