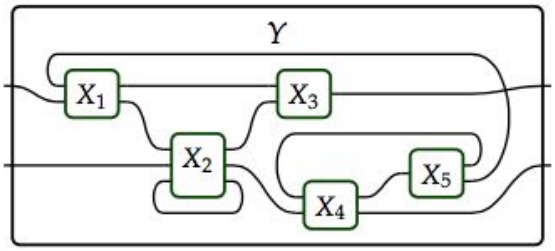
Seven Sketches in Compositionality:

Real-World Applications of Category Theory

IAP 2018



Summary: Category theory is a relatively new branch of mathematics that has transformed much of pure math research. The technical advance is that category theory provides a framework in which to organize formal systems, and by which to translate between them, allowing one to transfer knowledge from one field to another. But this same organizational framework also has many compelling examples outside of pure math. In this course, we will give seven sketches on real-world applications of category theory. We will also provide course notes that we hope will become a book.

Dates: Tues + Thurs, January 9 – 30
Time and Location: 1:30 – 3pm, Room 2-255
Instructors: David Spivak and Brendan Fong
Details: http://tinyurl.com/7sketches

Applications	***Category theoretic notions***
Cascade effects	*Posets and adjunctions*
Data transformation	*Categories, functors, and universal constructions*
Resource theory	*Monoidal posets and categorification*
Collaborative design	*Enriched categories and profunctors*
Signal flow graphs	*Props and graphical proof systems*
Electrical circuits	*Wiring diagrams and functorial semantics*
A logic of behavior	*Sheaves, toposes, and internal languages*