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*Path Categories and Graphs*

In classical homotopy theory, two spaces are considered homotopy equivalent if one space can be continuously deformed into the other. This theory, however, does not respect the discrete structure of graphs with their vertices and edges. For this reason, a discrete homotopy theory for graphs is needed. A path category is a structure associated to Moore paths and a natural starting place for defining a homotopy theory. In this talk, I will discuss what a path category is, how path categories can be used to define a discrete homotopy theory for graphs, and what kind of structure a path category gives. This work was done in collaboration with Laura Scull and Robin Cockett.