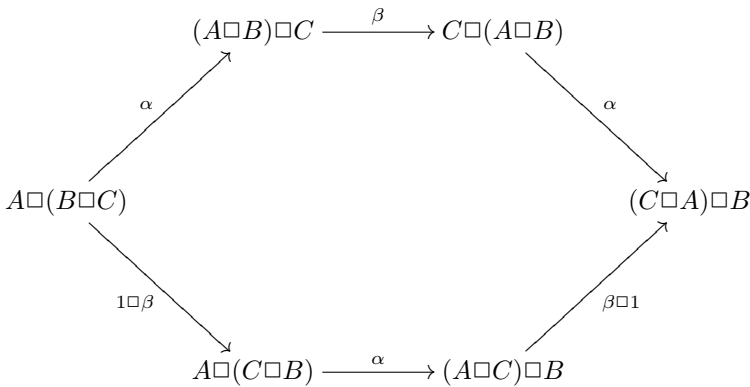


# HINTS ON QUANTUM GRAVITY 1: Mac Lane and Einstein

Thursdays at 4:30 in CW 131

One seminar, two tracks. The first will be an introduction to Category Theory leading to topological quantum field theories and invariants of manifolds. Quantum Mechanics will be the motivation underlying this track but will not be presented yet. The second will be an introduction to General Relativity leading to the study of black holes. It will start with a review of Special Relativity and pseudo-Riemannian manifolds and lead us to wormholes and parallel universes! Very little background knowledge presumed all along.



Sep. 04: Categories and functors

Sep. 18: Limits and adjoints

Oct. 02: Monoidal categories

Oct. 16: Graphical calculus

Oct. 30: 2-dimensional topological quantum field theories

Nov. 13: Triangulations and invariants

Sep. 11: Minkowski spacetime

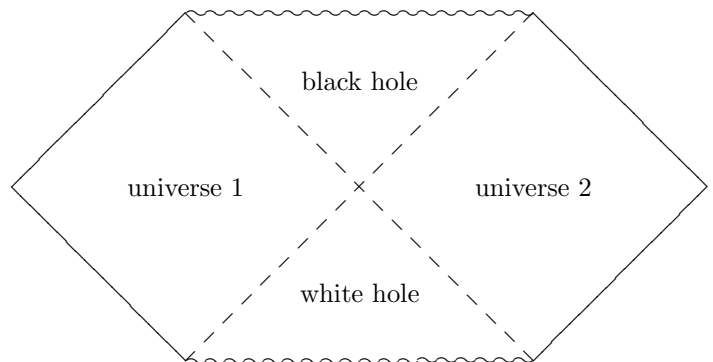
Sep. 25: Pseudo-Riemannian geometry

Oct. 09: Lagrangians

Oct. 23: Einstein's field equations

Nov. 06: Exact solutions: black holes

Nov. 20: Penrose diagrams: wormholes and parallel universes



Presented by Dany Majard and Shawn Westmoreland (Department of Mathematics, Kansas State University)