

# Topology Seminar

## Dominic Verity

of Center of Australian Category Theory will be speaking on

## Homotopy Coherent Adjunctions

on February 27 at 4:30 in  
MIT Room 2-131

The aim of this talk is to discuss the homotopy coherence properties of adjunctions between quasi-categories.

Taking as our lead the theory of the “walking adjunction”  $A$  of 2-category theory, we generalise to categories enriched in quasicategories and show that this same 2-category plays a similar role in this new context. Specifically, using insights drawn from the calculus of string diagrams we give an explicit presentation of  $A$  as a simplicially enriched category. We then use this to show that if  $C$  is any quasicategory enriched category and  $u$  is a right adjoint 0-arrow in  $C$ , in some suitable sense to be discussed, then this data may be completed to give a simplicially enriched functor  $A \rightarrow C$ . Furthermore, we show that the space of all such extensions is contractible.

That adjunctions of quasicategories may be completed up to enriched functors on  $A$  in this way contains, in its very essence, the adjunction data discussed by Jacob Lurie. Such enriched functors encapsulate both the coherent monad and the coherent comonad generated by such an adjunction and provide the building blocks upon which to found a formal theory of such things along the lines established by Street in the 2-categorical context.