

1154-03-1433

Shay Allen Logan* (salogan@ksu.edu). *Hyperdoctrines in Relevant Logic*.

An implicit assumption of much of the work in categorial logic in the half century since Lawvere's *Adjointness in Foundations* is that quantification, correctly done, should give rise to a type of structure known as a *hyperdoctrine*. From this perspective, Kit Fine's *stratified semantics* for quantified relevance logics looks like an outlier.

There are two purposes of this talk: first is to provide a brief but useful overview of the basics of hyperdoctrines. The second is to demonstrate a correspondence between hyperdoctrines and stratified models that can be use to prove completeness of a certain relevant logic with respect to a class of hyperdoctrines.

Concretely, we will show that corresponding to each stratified model S is a functor H_S mapping the category $\mathbf{FinSet}_{\subseteq}$ to a category of frames and frame morphisms. Quantification, as usual, is interpreted via adjoints to (images of) inclusions, and various logical properties are preserved by imposing versions of the Beck-Chevalley conditions. We will sketch how to prove that for all sentences ϕ , $S \models \phi$ iff $H_S \models \phi$. (Received September 15, 2019)