Charlie Price: Inference and Category Theory

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1 Introduction

Charlie Price, Inference and Category Theory, Arbeitsseminar Homotopie Kategorien, ARGE Logik in Wien, Sommersemester 2021. Based on Charlie's talk at Logic Colloquium 2019 in Prague, Inference and Category Theory, Logic Colloquium 2019, Lower Austria.

Charlie's talk concerns the first by deriving and discussing the Gentzen Hauptsatz for a fragment of Lawvere's Adjunction Logic. Lawvere's Adjunction Logic is a logic of adjunctions, which can be thought of as a logic of type theories.

Charlie's talk is part of his wider programme, Rigidity plus inference equals logic, which he explains in his talk, Rigidity and Logic.

> Rigidity is a hypothesis that expressing in natural terms all concepts that are of interest to a given mathematical theory, the resulting theory is rigid, meaning that every object of interest admits no nontrivial symmetries.
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> Rich's claim with this list as an in-number virus sequence, is sequence, Rigidity plus inference equals logic.
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> Charlie's talk is based on the work of Peter Aczel, Matthew Clemence, Thierry Coquand, Peter Dybjer, Nicola Gambino, Richard Garner, Steve Awodey, the formulation of logic and theory of logic, and the theory of logic.
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2 Finite cones, products, and equalizers in Set

Definition 1 (Adjunction). A category has an adjunction if, and only if, it has finite cones.

> An adjunction is an $(n+1)$-ary $(n \geq 0)$ operation, $\mathbf{Adj}$, satisfying the following equations, where $\mathbf{Adj}(\mathbf{Adj}(\mathbf{Adj}(