

SOME APPLICATIONS OF QUANTITATIVE TYPES INSIDE AND OUTSIDE TYPE THEORY

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ABSTRACT. In this talk, we will discuss some of the applications of intersection type theory, introduced by Coppo and Dezani around 1980, to higher order rewriting. After presenting some of its historical elements and applications, we will focus on *non-idempotent* intersection types, due to Gardner, Kfoury and de Carvalho. More specifically, we will address their uses in the characterization of normalization properties and in the study of operational properties of *untyped* higher-order calculi. For instance, we will see why they give semantical and arguably simpler proofs of properties pertaining to reduction paths. We will also see why non-idempotent types provide quantitative information on terms, e.g., give upper bounds for the length of certain normalizing sequences. On the way, we will give some inputs on the lambda-mu and the infinitary lambda-calculi, which will be used as examples along with the lambda-calculus.