

The Proof Theory of Common Knowledge

Thomas Studer

University of Bern

Abstract

Common knowledge of a proposition A can be characterized by the following infinitary conjunction:

everybody knows A and
everybody knows that everybody knows A
and everybody knows that everybody knows that everybody knows A
and so on.

We present a survey of deductive systems for the logic of common knowledge. In particular, we present two different Hilbert-style axiomatizations and two infinitary cut-free sequent systems. Further we discuss the problem of syntactic cut-elimination for common knowledge. We conclude the talk with a list of open problems.