

Einladung zum Vortrag

**„Krivine’s classical realisability and the unprovability of the
axiom of choice and the continuum hypothesis“**

von

Jaime Gaspar

(INRIA Paris-Rocquencourt, πr^2 , Univ Paris Diderot)

am

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Abstract

Proof interpretations are tools in mathematical logic with a wide range of applications: consistency results, independence results, and extraction of computational content from proofs, just to name a few. They are usually applied only in the context of logic or arithmetic. There is the dream of applying them even to set theory. Now the dream is fulfilled with a novel proof interpretation: Krivine’s classical realisability.

In this talk a personal digest of Krivine’s classical realisability and one of its main applications to set theory are presented: set theory ZF plus the statement “there is a set S between \mathbb{N} (the set of natural numbers) and \mathbb{R} (the set of real numbers) not equinumerous to its cartesian square $S \times S$ ” is a consistent theory where both the axiom of choice and the continuum hypothesis fail. As a corollary we get two classical and celebrated results: ZF does not prove the axiom of choice nor the continuum hypothesis.

This talk is focused on the ideas, sets technicalities aside and is emphasised on the parts closer related to computer science.