

MATEMATISKA INSTITUTIONEN
STOCKHOLMS UNIVERSITET
Avd. Matematik

SJÄLVSTÄNDIGT ARBETE I MATEMATIK

Torsdagen den 26 maj kl. 10:30-11:30 presenterar Mattias Wikström sitt arbete “ IpC^2 as a Foundation of Mathematics” (15 högskolepoäng, grundnivå).

Handledare: Peter LeFanu Lumsdaine

Plats: Sal 31, hus 5, Kräftriket

Sammanfattning: This paper discusses quantified intuitionistic propositional logic (IpC^2) and suggests that it may be able to serve as a simple and yet powerful foundation of mathematics. The logic is understood topologically, as a theory for reasoning about parts of objects, and it is shown how it has the expressive power for saying how the parts of an object with finitely many parts are structured. It is shown how a conventional first-order theory (whose logic may be classical logic, intuitionistic logic, or minimal logic) for reasoning about parthood can be translated into IpC^2 . The paper also shows how IpC^2 allows us to define a description operator, further highlighting the power of IpC^2 , and it is shown how the operator in question is related to well-known definitions of conjunctions, disjunctions, and the existential quantifier out of implication and the universal quantifier. The paper suggests three ways in which IpC^2 may be extended with existence axioms, a topic that matters for any foundation of mathematics. The existence axioms in question turn out to be related to three different fragments of IpC^2 which are also discussed in the paper, fragments where quantifiers are restricted from above and/or below.

Alla intresserade är välkomna!