

# LOGIKSEMINARIET STOCKHOLM–UPPSALA

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## **Some Ontology of Primes**

It is well-known that the covering relation for the Zariski spectrum of a commutative ring can be defined without any talk of points. We show that if for every ring there still were enough points to recover the covering, then the limited principle of omniscience would hold. This fragment of the law of excluded middle is an essentially nonconstructive principle, so because it allows us to solve the halting problem for Turing machines, if only in theory. More precisely, if there were enough points for a fixed but arbitrary ring, then one could decide whether any given element of this ring is nilpotent. The limited principle of omniscience then follows by applying this to an appropriate specific ring of a fairly simple character. Our argument notably works both for concrete and formal points: that is, for prime ideals and prime filters, respectively.

Onsdag 8 oktober kl 10.30–12.15,  
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Logikseminariets hemsida:  
<http://www.math.su.se/matematik/forskning/logik/>