

MATEMATISKA INSTITUTIONEN  
STOCKHOLMS UNIVERSITET  
Avd. Matematik

## SJÄLVSTÄNDIGT ARBETE I MATEMATIK

Torsdagen den 25 augusti kl. 10:00-11:00 presenterar Mattias Selin sitt arbete "Knot theory" (15 högskolepoäng, grundnivå).

Handledare: Alexander Berglund

Plats: Sal 32, hus 5, Kräftriket

Sammanfattning: A mathematical knot can be thought of as a piece of string with the ends tied together. This piece of string might be tangled in such a way that it cannot be untangled into a circular piece of string without cutting it up. This is the type of object studied in knot theory.

The goal of this bachelor's thesis is to investigate some of the famous knot polynomials that exists. In particular, the Jones polynomial and the HOMFLY polynomial. We begin by giving an introduction to the field of knot theory aimed at giving the reader the necessary definitions and concepts to fully grasp the rest of the thesis. Some basic well known facts are also presented and proved.

The concept of a link invariant is discussed and a short overview is given. We take a closer look at the Jones Polynomial and the HOMFLY polynomial.

A possible generalization of the HOMFLY polynomial to elements of a noncommutative ring is presented together with some new results giving a necessary condition for the non-commutative ring. A partial answer is given to the sufficiency of the condition.

Alla intresserade är välkomna!