MATEMATISKA INSTITUTIONEN
STOCKHOLMS UNIVERSITET
Avd. Matematik

SJÄLVSTÄNDIGT ARBETE I MATEMATIK

Torsdagen den 13 juni kl. 9.00–10.00 presenterar Emmi Arwidsson sitt arbete "Primary Decomposition" (15 högskolepoäng, grundnivå).

Handledare: Karl Rökaeus och Gwyn Bellamy

Plats: Sal 32, hus 5, Kräftriket

Sammanfattning: This paper concerns primary decomposition in Noetherian rings, a subject in commutative algebra with its origins in number theory. In the 19th century Dedekind developed the theory of "ideal numbersäs a consequence of the failure of rings of algebraic integers to be unique factorization domains. Dedekinds "ideal numbersäre what we today call ideals in an arbitrary ring. Dedekind proved that in rings fulfilling certain conditions, today called Dedekind domains, there exists a unique factorization of every ideal into a product of prime ideals. He proved that the ring of algebraic integers in any number field satisfies these conditions and so he developed a theory that in a way saved"unique factorization in the above mentioned rings. Lasker generalized this concept into primary decomposition in 1905. Primary decomposition holds for a bigger class of rings, called Noetherian rings and is a (not unique) decomposition of ideals as the intersection of primary ideals. Emmy Noether reformulated and axiomatized the theories of Dedekind and Lasker in 1920 and introduced the ascending chain condition, we call rings which satisfies the ascending chain condition Noetherian in her honor.
This paper concerns the theory of primary decomposition in Noetherian rings and will prove the results obtained by Dedekind as a consequence of the general theory. This paper will also introduce the concept of Noetherian modules and prove the corresponding results on primary decomposition in this context. Hence this paper is within the field of commutative algebra but will also include results normally covered in number theory.

Alla intresserade är välkomna!