MATEMATISKA INSTITUTIONEN
STOCKHOLMS UNIVERSITET
Avd. Matematik

SJÄLVSTÄNDIGT ARBETE I MATEMATIK

Fredagen den 4 juni kl. 15.00–16.00 **(observera dagen och tiden!)** presenterar Ornella Greco sitt arbete "Unique and non-unique factorization in commutative rings" (30 högskolepoäng, avancerad nivå).

Handledare: Ralf Fröberg och Christian Gottlieb

Plats: Sal 21, hus 5, Kräftriket

Abstract: In this work, we study the factorization in $A[x]$, where A is an Artinian local principal ideal ring (briefly SPIR), whose maximal ideal, (t), has nilpotency h: this is not a Unique Factorization Ring, in fact its elasticity is infinity, but we can write, in quite a unique way, an element $x \in A[x]$ as the product of a nilpotent element, t^k, of a unit, u, and of a finite number, say r, of monic primary polynomials, $g_1, \dots, g_r$.
Then, we extend this result to the case in which A is an Artinian principal ideal ring: to do this, we observe that such a ring can be written as a direct product of finitely many SPIR's, $A_1, \dots, A_n$; using this result, we get that an element $(f_1, \dots, f_n) \in A_1[x] \oplus \cdots \oplus A_n[x] \cong A[x]$, whose components are all non-zero, can be expressed as the product of a zerodivisor, of a unit, and of finitely many primary elements, and this product is quite unique.
Finally, we give the definition of *Unique Factorization Ring according to Fletcher*, briefly F-UFR, and we study the factorization in a polynomial ring over an F-UFR, B: and, using the fact that B is a direct product of finitely many UFD's and SPIR's, we get that an element in $B[x]$, whose components are all non-zero and non-units, can be expressed as the product of a unit, of finitely many F-irreducible elements, of finitely many primary elements, and of elements, whose components are units and zerodivisors.

Alla intresserade är välkomna!