Industrious Number Theory

December 4–5, 2009
Faculty of Mathematics, Kyushu University
http://www2.math.kyushu-u.ac.jp/~shin-h/INT09/industry2.html

CHANG, Seunghwan (Postech)

"Extensions of rank one (φ, Γ)-modules and crystalline representations"

I will talk about mod p extensions of rank one (φ, Γ)-modules arising as mod p reductions of Wach modules corresponding to crystalline extensions of crystalline characters, and explain how they are related to the bounded extensions of (φ, Γ)-modules. This is a joint work with Fred Diamond.

CHIDA, Masataka (Kyoto)

"Anti-cyclotomic extensions and the central value of L-functions for modular forms"

In this talk, we will discuss on Selmer groups the central value of L-functions for modular forms. In particular, we will explain an application of an Euler system of Heegner cycles.

CHOI, Suhhyun (KAIST)

"Local deformation lifting spaces of mod l Galois representations"

In this talk, I will give results on dimensions of local deformation lifting rings of mod l Galois representations and characterize their irreducible components for some cases.

HARASHITA, Shushi (Kobe)

"The optimal estimation of the Newton polygon of a p-divisible group from its p-kernel"

In this talk, we show that there exists the supremum of the Newton polygons of p-divisible groups with a given p-kernel type, and give a concrete algorithm determining it. This can be seen as an unpolarized analogue of Oort's conjecture on the intersections of Newton polygon strata and Ekedahl-Oort strata in the moduli space of principally polarized abelian varieties in characteristic $p > 0$.

IM, Bo-Hae (Chung-Ang)

"Rational points of hypersurfaces over quasi-finite fields"

There exists a function $f\colon \mathbb{N} \to \mathbb{N}$ such that for every positive integer d, every quasi-finite field K and every projective hypersurface X of degree d and dimension $\geqslant f(d)$, the set $X(K)$ is non-empty. This is a special case of a more general result about intersections of hypersurfaces of fixed degree in projective spaces of sufficiently high dimension over fields with finitely generated Galois groups.

LEE, Dong Uk (KIAS)

"A proof of a conjecture of Yasuo Morita"

A conjecture of Yasuo Morita says that for an abelian variety defined over a number field, if its Mumford-Tate group does not have a nontrivial unipotent $\mathbb{Q}$-rational element, it has potentially good reduction everywhere. We prove this conjecture, using recent results obtained by Paugam and Vasiu about the same conjecture, and some fine information on general Mumford-Tate groups.

SHIHO, Atsushi (Tokyo)

"On logarithmic extension of overconvergent isocrystals"

We give a certain condition for an overconvergent isocrystal on a smooth variety over a field of characteristic $p > 0$ to extend logarithmically to its smooth compactification whose complement is a simple normal crossing divisor. If time permits, we also give a 'cut-by-curves criterion' for this condition.

TOMIYAMA, Yoshiyuki (Kyushu)

"Galois representations ramified at infinitely many primes"

We construct n-dimensional p-adic Galois representations ramified at infinitely many primes under some technical conditions. We use the lifting theorem for n-dimensional mod p Galois representations to construct them.