2016학년도 1학기

수학전공 Colloquium

제 목	**Iwasawa theory and the Tate-Shafarevich group**
연 사	**서수길(연세대)**
초 록	For a number field k and odd prime p, we investigate the gap between the condition for a finite cyclic p-extension K/k to be $\mathbb{Z}_p$-extendable and the condition $\mathbb{Z}\,[K:k|p^r\mathbb{Z}$-extendable for all $r \geq 0$ where the second condition is said to be cyclic p^{∞}-extendable in this paper. For the Galois group G_S of the maximal $p\infty$ -ramified extension of k and the p^rth roots μ_{p^r} of unity, we describe the Shafarevich-Tate group $Ш^1(G_S, \mu_{p^r})$ as the quotient of two subgroups of the idele group of k such that the numerator is connected to the condition of $\mathbb{Z}_p$ -extendable and the denominator to the condition of cyclic p^{∞}-extendable. For a number field k, the Leopoldt conjecture for (k, p) can be shown to be equivalent to $\{\lvert Ш^1(G_S, \mu_{p^r})\rvert\}_{r\in N} < \infty$, and for almost all odd primes p, we show under the Leopoldt conjecture that the small-est integer p^s which makes the sequence $\{\lvert Ш^1(G_S,\ \mu_{p^r})\rvert\}_{p^r\geq p^s}$ constant is equal to the exponent of the torsion subgroup of the maximal p -subgroup of the abelianize-tion G_S^{ab} of G_S. In this case, we can evaluate explicitly the residue $res_{s=1}\zeta_p(k,s)$ of the p-adic zeta function $\zeta_p(k,s)$ at s=1 when k is totally real.
일 시	**5월 11일 수요일 5시**
장 소	**5E102**