PEIKAI QI, Michigan State University

An analogue of Greenberg pseudo-null conjecture for CM fields

We will give an analogue of Greenberg's pseudo-null conjecture for CM fields. Let K be a CM field and K^+ be the unique totally real subfield of K. Assume that primes above p in K^+ all splits in K. Let $\mathfrak{P}_1, \mathfrak{P}_2, \cdots, \mathfrak{P}_s, \tilde{\mathfrak{P}}_1, \tilde{\mathfrak{P}}_2, \cdots, \tilde{\mathfrak{P}}_s$ be prime ideas in K above p, where $\tilde{\mathfrak{P}}_i$ is the complex conjugation of $\mathfrak{P}_i$. We show that there is unique $\mathbb{Z}_p$-extension of K unramified outside $\mathfrak{P}_1, \mathfrak{P}_2, \cdots, \mathfrak{P}_s$. We also show that such $\mathbb{Z}_p$-extension for CM field has similar properties as cyclotomic $\mathbb{Z}_p$-extension of a totally real field. We also give some criteria for Iwasawa invariant $\mu = \lambda = 0$. The work is joint with Matt Stokes.