1116-VN-2660 **Shawn Michael Elledge*** (shawn.elledge@asu.edu), Wanner Hall 301J, 6073 S. Backus Mall, Mail Code 2780, Mesa, AZ 85212-2780. *On Minimal Levels of Iwasawa Towers.*

In 1959, Iwasawa proved that the size of the p-part of the class groups of a $\mathbb{Z}_p$-extension grows as a power of p with exponent $\mu p^m + \lambda\, m + \nu$ for m sufficiently large. Broadly, we explore algebraic conditions necessary for a given m to be sufficiently large.

More precisely, let CG_m^i (class group) be the ϵ_i-eigenspace component of the p-Sylow subgroup of the class group of the field at the m-th level in a $\mathbb{Z}_p$-extension; and let $IACG_m^i$ (Iwasawa analytic class group) be $\mathbb{Z}_p[[T]]/((1+T)^{p^m} - 1, f(T,\omega^{1-i}))$, where f is the associated Iwasawa power series. It is expected that CG_m^i and $IACG_m^i$ be isomorphic; however, as of yet, this isomorphism is unestablished in general.

We consider the existence and the properties of an exact sequence

$$0 \to \ker \to CG_m^i \to IACG_m^i \to \mathrm{coker} \to 0,$$

primarily focusing on verifying if m is sufficiently large that the kernel and cokernel of the above exact sequence have become well-behaved, providing similarity of growth both in the size and in the structure of CG_m^i and $IACG_m^i$. (Received September 22, 2015)