1150-55-533 **Andrew Salch*** (asalch@math.wayne.edu). *A topological proof of some cases of Leopoldt's conjecture.* Preliminary report.

I'll give a proof of the Leopoldt conjecture for a certain (infinite) family of number fields. These number fields are abelian extensions of Q, so Leopoldt's conjecture is known classically to hold for them, by work of Baker and Brumer. The novelty of the proof I'll give is that you get Leopoldt's conjecture in these cases due to the existence of periodic families in stable homotopy groups of finite CW-complexes: first I use Colmez's p-adic class number formula to reduce Leopoldt's conjecture for these number fields to a certain cohomological property of an Iwasawa module, and then I show that the same Iwasawa module encodes the action of the height 1 Morava stabilizer group on the complex K-theory of the mod p Moore space. The nontriviality of the alpha family in the K(1)-local stable homotopy groups of Moore spaces then implies Leopoldt's conjecture for these fields. (Received July 15, 2019)