

BOSTON UNIVERSITY NUMBER THEORY SEMINAR

# The inverse Galois problem for $p$ -adic fields

David Roe  
University of Pittsburgh

Monday, November 13 at 4:15 pm  
111 Cummington Mall, MCS B21  
Tea and cookies in MCS 144 at 4:00 pm

**Abstract:** Given a finite group  $G$  and a field  $K$ , the inverse Galois problem is to determine whether there exists an extension  $L$  of  $K$  so that  $\text{Gal}(L/K) = G$ . When  $K$  is a  $p$ -adic field, there will be only finitely many extensions  $L$  with  $\text{Gal}(L/K) = G$ . We may thus refine the question by asking how many extensions exist and attempting to enumerate them. I will describe an algorithm for counting such extensions, the enumeration problem and applications.