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Emily Hamilton* (emh@mathcs.emory.edu), Department of Mathematics and CS, Emory University, Atlanta, GA 30322. *Finite quotient of rings and applications to subgroup separability of linear groups.*

Let H be a subgroup of a group G . H is *separable* in G if given any element $g \in G \setminus H$, there is a finite index subgroup $K \subset G$, such that $H \subset K$ but $g \notin K$. A group G is *subgroup separable* if every finitely generated subgroup of G is separable in G . Subgroup separability is a powerful property. It has applications in group theory and geometric topology. In group theory, it is linked to the solution of generalized word problems. In geometric topology, it is the traditional group-theoretic tool used to decide if a given immersion in a manifold M will lift to an embedding in a finite covering of M .

In this talk, we use results from algebraic number theory to construct finite quotients of finitely generated rings lying in number fields. We then apply this to subgroup separability of linear groups. Moreover, we describe a few applications to subgroup separability of hyperbolic 3-manifold groups. (Received February 24, 2004)