1107-37-400 **Scott Schmieding*** (schmiedi@math.umd.edu), College Park, MD , and **Mike Boyle**, College Park, MD. *Strong shift equivalence and algebraic K-theory.*

Let R be a ring. Two square matrices A, B are elementary strong shift equivalent (ESSE-R) over R if there are matrices U, V over R such that $A = UV$ and $B = VU$. Strong shift equivalence over R (SSE-R) is the equivalence relation generated by ESSE-R. Shift equivalence over R (SE-R) is a more tractable equivalence relation which is refined by SSE-R. The refinement is trivial if $R = \mathbb{Z}$ (Williams), a principal ideal domain (Effros 1981) or a Dedekind domain (Boyle-Handelman 1993), but no results have appeared since then. We show that this refinement is captured precisely by the group $NK_1(R)$ of algebraic K-theory. It follows that for very many, but not all rings R, the relations SE-R and SSE-R are the same. There are applications.

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