1163-15-108 **Laura Cossu***, Institute of Mathematics and Scientific, Computing, Heinrichstrasse 36/III, 8010 Graz, Austria. *Idempotent factorizations of singular* 2×2 *matrices over quadratic integer rings.*

Let D be the ring of integers of a quadratic number field $\mathbb{Q}[\sqrt{d}\,]$. Addressing the classical open problem of the characterization of integral domains R such that every singular (*i.e.*, with zero determinant) matrix over R is a product of idempotent matrices, we investigate the idempotent factorization of 2×2 singular matrices over D. We show that when $d < 0$ there exist singular matrices that do not admit an idempotent factorization, while in case $d > 0$ we use Vaserštein's result (1972) that $SL_2(D)$ is generated by transvections to prove that any 2×2 matrix with either a null row or a null column is a product of idempotents. As a consequence, every dimension 2 column-row matrix over a real quadratic integer ring decomposes into idempotent factors. Based on a joint work with P. Zanardo. (Received August 16, 2020)