PRESENTATIONS FOR SUBRINGS OF FINITE CO-RANK

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By the classical Reidemeister-Schreier Theorem, any subgroup of finite index in a finitely generated (finitely presented) group is finitely generated (finitely presented). We show that a corresponding result holds for rings: Let A be a ring with a subring B such that A/B is finitely generated as an additive group (that is, B has finite co-rank in A). Then A is finitely generated (finitely presented) if and only if B is finitely generated (finitely presented). This generalizes results by Lewin on generating subrings of finite index (1969) and by Voden on presentations of subalgebras of finite co-dimension (2009).

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