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Non-commutative Rank and Stability of Quiver Representations. Preliminary report.

We start with $n \times n$ matrices A_1, \dots, A_m , and consider the matrix $A = x_1A_1 + \dots + x_mA_m$. We would like to determine the rank of A , where x_1, \dots, x_m are viewed as non-commuting generators of a free skew-field. This is the non-commutative rank of A . Finding this rank is related to the stability of a representation of a Kronecker quiver. We generalize this non-commutative rank to any acyclic quiver representation. (Received January 18, 2020)