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Reverse Cholesky factorization and reproducing kernel Hilbert spaces

We prove that every positive semidefinite matrix over the natural numbers that is eventually 0 in each row and column can be factored as the product of an upper triangular matrix times a lower triangular matrix. We also extend some known results about factorization with respect to tensor products of nest algebras. Our proofs use the theory of reproducing kernel Hilbert spaces.