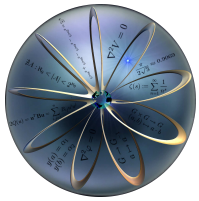

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Bruhat decomposition

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Bruhat decomposition is the name for the fact that $B\backslash G/B = W$, where G is a reductive group, B a Borel subgroup, and W the Weyl group. Less canonically, one can write $G = BWB$.

In the case of the general linear group $G = GL_n$, B is the group of nonsingular upper triangular matrices, and W is the collection of permutation matrices (and is isomorphic to S_n). Any nonsingular matrix can thus be written uniquely as a product of an upper triangular matrix, a permutation matrix, and another upper triangular matrix.