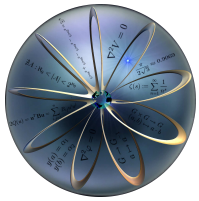

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Nagao's theorem

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For any integral domain k, the group of $n \times n$ invertible matrices with coefficients in $k[t]$ is the amalgamated free product of invertible matrices over k and invertible upper triangular matrices over $k[t]$, amalgamated over the upper triangular matrices of k. More compactly

$$\mathrm{GL}_n(k[t]) \cong \mathrm{GL}_n(k) *_{B(k)} B(k[t]).$$