Summary: In this paper, we study two-sided tilting complexes of preprojective algebras of Dynkin type. We construct the most fundamental class of two-sided tilting complexes, which has a group structure by derived tensor products and induces a group of auto-equivalences of the derived category. We show that the group structure of the two-sided tilting complexes is isomorphic to the braid group of the corresponding folded graph. Moreover, we show that these two-sided tilting complexes induce tilting mutation and any tilting complex is given as the derived tensor products of them. Using these results, we determine the derived Picard group of preprojective algebras for type A and D.

MSC:
16G20 Representations of quivers and partially ordered sets
16G10 Representations of associative Artinian rings
05E16 Combinatorial aspects of groups and algebras
18G80 Derived categories, triangulated categories

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