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Flag varieties and HOMFLY-PT link homology.

We construct a homomorphism from the braid group on N strands to a category of $GL(N)$ -equivariant matrix factorizations on the product of $\mathfrak{gl}(N)$ and two copies of the cotangent bundle to a flag variety. Based on this action we construct a triply graded link homology which categorifies the HOMFLY-PT polynomial. This construction is related to the geometric Langlands program and Gukov-Witten defects in Kapustin-Witten Yang-Mills TQFT. We will explain the details of this construction for two-strand torus knots and links. (Received September 11, 2016)