1162-57-31 **Jozef H Przytycki*** (przytyck@gwu.edu), George Washington Universuty, Phillips Hall, Phillips Hall, Washington, DC 20052-0001, and **Rhea Palak Bakshi** (rhea_palak@gwmail.gwu.edu).
Remarkable closed formula in Temperley-Lieb algebra.

With the aim of computing the Kauffman bracket skein module of the connected sum of two solid tori, we prove the following in Temperley-Lieb algebra. Consider a positive pure braid $w_k = \sigma_{k-1}\sigma_{k-2}\cdots\sigma_2\sigma_1^2\sigma_2\cdots\sigma_{k-2}\sigma_{k-1}$ and project it onto Temperley-Lieb algebra by taking $\sigma_i = AId + A^{-1}e_i$. We write w_k in the classical (Catalan) basis of TL_k and obtain the following formula for the coefficients of E or its any partial permutation (notation is explained below):

$$A^{2k-2j_s-4}(A^{2i_1} - A^{-2i_1})(A^{2(i_2-j_1-1)} + A^{-2(i_2-j_1-1)})\cdots(A^{2(i_s-j_{s-1}-1)} + A^{-2(i_s-j_{s-1}-1)}).$$

Let $w_k = \sum_{C\in Cat} C(A)C$ where the sum is taken over all classical Catalan basis elements and $C(A)$ is a Laurent polynomial coefficient. Then $C(A) = 0$ if C written in TL_k generators (in a minimal form) has some letter appearing twice. Otherwise let $E_{i,j} = e_ie_{i+1}...e_j$ for any $1 \leq i \leq j \leq k-1$. Define $E = E_{i_1,j_1}E_{i_2,j_2}...E_{i_s,j_s}$ where $j_{t-1} \leq i_t - 2$. Our formula is useful in studying the effect of handle slidings on the KBSM of connected sums of arbitrary 3-manifolds. (Received August 14, 2020)