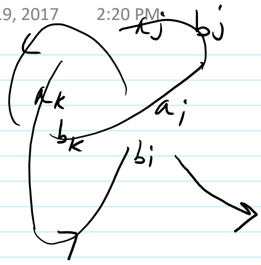
17-1350-AKT Fri Feb 3, Brute Hour 4: Normal ordering in g0

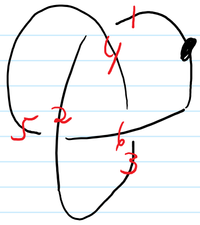
January 19, 2017 2:20 PM



$R=\sum a_i\otimes b_i \in A\otimes A = \hat{U(g)}\otimes\hat{U(g)}$

s.t. $R^{12}R^{13}R^{23}=R^{23}R^{13}R^{12}$

$\longrightarrow \sum_{i,j,k} b_i a_j b_k a_i b_j a_k \in U(g)$



PBW: $g=\langle x_1 \dots x_k\rangle \Rightarrow \{x_1^{a_1}x_2^{a_2}\cdots x_k^{a_k} : a_i\in\mathbb{Z}_{\geq 0}\}$ is a basis of $U(g)$.

Today: $g_0=\langle h,e,l,f\rangle \Big/ \begin{matrix} h \text{ central} \\ [e,l]=-e \quad [f,l]=f \quad [e,f]=h\end{matrix}$

$r=h\otimes l+e\otimes f \qquad R=\exp(r)$

Note $U(g_0)^{\otimes S}=U(\oplus_S g_0)=U\left(\langle h_i,e_i,l_i,f_i\rangle \Big/ \begin{matrix} h_i \text{ central} \\ [e_i,l_j]=\delta_{ij}e_i \text{ etc.}\end{matrix}\right)$

On to implementation at 170203-g0dsO.nb