

Conventions for Symbolic $gl(*)$

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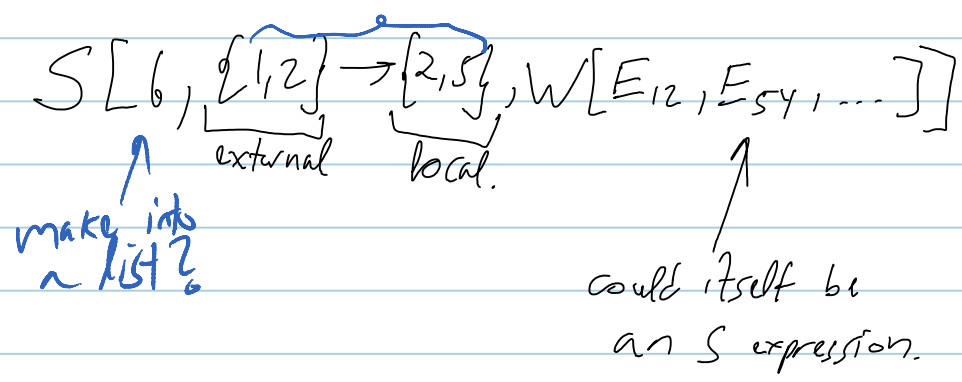
$$\sum_{i_1 < i_2 < i_3 \dots i < n} E_{i_2 i_1} E_{i_2 i_3} \dots$$

$$(i, j) \mapsto \sum_{k_1 < i < k_2 < k_3 < j < k_4 \dots} E_{k_1 i} E_{j k_3} E_{k_2 j} \dots$$



$$(i_1, i_2) \mapsto \sum_{\substack{k_1 < k_2 < k_3 < k_4 < k_5 < k_6 \\ \vdots \quad \quad \quad \vdots \\ i_1 \quad \quad \quad i_2}} E_{k_1 k_2} E_{k_5 k_4} \dots$$

allow symbols



Issues - Products
Iteration.

Perhaps a convention should be declared that no indices are ever to be used unless their relative ordering is known.

$$gl(*) = \left\langle \sum_{i_1 < i_2 < \dots < i_k} E_{i_2 i_3} E_{i_1 i_5} \dots \right\rangle$$

$$= \left\langle S \left[\kappa, \text{word in } U(\mathfrak{gl}(\kappa)) \right] \right\rangle \\ \mathcal{W} [E_{12}, E_{54}, \dots]$$

$$\mathfrak{gl}^*(*) = \left\langle \sum_{i_1 < \dots < i_k} E_{i_2 i_1}^{j_1} E_{i_3 i_2}^{j_2} \dots \right\rangle$$

A circuit algebra

(a "strand bi-algebra"?)

We need

$$\text{sh}[2, 3] = \left\{ \begin{array}{l} \{3, \{1, 3\}, \{1, 2, 3\}\}, \\ \{4, \{2, 3\}, \{1, 2, 4\}\}, \\ \text{etc.} \end{array} \right\}$$

Can the co-bracket be implemented in this restricted context?

Are we happy w/ $\sum_{i < j} a_{ij} E_{ii} \wedge E_{jj}$?