U(tder)

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4:34 AM

<u>Question</u> As v.s., $tder_n = \bigoplus_n Lie_n$, so as v.s.,

$U(tder_n) = FA_n^{\otimes n}$. What is the induced "new" algebra structure on $FA_n^{\otimes n}$, and who else cares about it?

<u>Approximate answer</u> write $V = V_1 \otimes \dots \otimes V_n$ & $W = W_1 \otimes \dots \otimes W_n$, then

$$V \times W = (V_1^W W_1^V) \otimes \dots \otimes (V_n^W W_n^V),$$

?

where (say)

$$V_1^W = V_1 / \; x_i \mapsto S(W_i') x_i W_i'', \quad \Delta W_i = W_i' \otimes W_i''$$

<u>Better</u>

$$V \times W = (V_1'^{W''} W_1'^{V''}) \otimes \dots \otimes (V_n'^{W''} \otimes W_n'^{V''})$$?

Does this induce the right bracket on primitives?

$$V \times W - W \times V = (V_1 W_1 - W_1 V_1) \otimes \dots + (V_1^W) \dots + (W_1^V) \dots$$
$$- (\quad \text{same} \quad)$$

.... So something must break the symmetry, though I'm not sure how this would arise.

<u>Next</u>

$$V \times W = (V_1^{W_1'} W_1'') \otimes \dots \otimes (V_n^{W_n'} \cdot W_n'')$$

Yes, see next page 1. Does this relate to the shuffle product as in Furusho?

2. What is the general principle for the

2. What is the general principle for the derivation of such formulae?