

Deciphering Turbo-Gassner

June 4, 2016 11:56 AM

What could be simpler?

$$\begin{aligned}
 \text{[18]}- \text{TG}_{j,k}[\xi_-] &:= \text{Expand}[\xi / . \{ \\
 &u_x \rightarrow (1 - t_j) u_j + t_j u_k, \\
 &w_j \rightarrow w_j + (1 - t_j^{-1}) w_k, \quad w_k \rightarrow t_j^{-1} w_k, \\
 &f_- \cdot v_j \Rightarrow f v_j + f u_j u_k w_k + ((1 - t_j^{-1}) (t_j \partial_{t_j} f - t_k \partial_{t_k} f) - f) u_j u_j w_k, \\
 &f_- \cdot v_k \Rightarrow f (1 - t_j) v_j + f t_j v_k - t_j^{-1} (t_j - 1)^2 (t_j \partial_{t_j} f - t_k \partial_{t_k} f) u_j u_j w_k + \\
 &\quad (t_j - 1) (t_j \partial_{t_j} f - t_k \partial_{t_k} f) u_j u_k w_k, \\
 &f_- \cdot v_{\pm} \Rightarrow f v_{\pm} + (1 - t_j^{-1}) (t_j \partial_{t_j} f - t_k \partial_{t_k} f) u_{\pm} u_j w_k \}]
 \end{aligned}$$

It looks like things will simplify if the ∂ operator is applied before the R action:

$$v_i \mapsto$$

$$\sigma_{jk} \left((1 - t_j^{-1}) (t_j \partial_{t_j} f - t_k \partial_{t_k} f) u_i \right) \otimes u_j w_k$$