

U21[\mathcal{E}_-] :=

$$\mathcal{E} /. \{ \mathbf{B}_{i_-}^{p_-} \Rightarrow e^{-p \hbar b_i}, \mathbf{B}^{p_-} \Rightarrow e^{-p \hbar b}, \mathbf{T}_{i_-}^{p_-} \Rightarrow e^{p \hbar t_i}, \\ \mathbf{T}^{p_-} \Rightarrow e^{p \hbar t}, \mathcal{A}_{i_-}^{p_-} \Rightarrow e^{p \alpha_i}, \mathcal{A}^{p_-} \Rightarrow e^{p \alpha} \};$$

12U[\mathcal{E}_-] :=

$$\mathcal{E} //. \{ e^{c_- \cdot b_{i_-} + d_-} \Rightarrow \mathbf{B}_i^{-c/\hbar} e^d, e^{c_- \cdot b + d_-} \Rightarrow \mathbf{B}^{-c/\hbar} e^d, \\ e^{c_- \cdot t_{i_-} + d_-} \Rightarrow \mathbf{T}_i^{c/\hbar} e^d, e^{c_- \cdot t + d_-} \Rightarrow \mathbf{T}^{c/\hbar} e^d, \\ e^{c_- \cdot \alpha_{i_-} + d_-} \Rightarrow \mathcal{A}_i^c e^d, e^{c_- \cdot \alpha + d_-} \Rightarrow \mathcal{A}^c e^d, \\ e^{\mathcal{X}_-} \Rightarrow e^{\text{Expand@}\mathcal{X}} \};$$

12U[r_Rule] :=

$$\text{Module}[\{\mathbf{U} = r[[1]] /. \{\mathbf{b} \rightarrow \mathbf{B}, \mathbf{t} \rightarrow \mathbf{T}, \alpha \rightarrow \mathcal{A}\}\}, \\ \mathbf{U} \rightarrow 12\text{U}[U21[\mathbf{U}] /. r];$$

AlsoUpper[rs_List] := $rs \cup (12\text{U} / @ rs)$;