

$$\mathbb{E}_{\{i\} \rightarrow \{i\}} \left[ -\mathbf{a}_i \alpha_i - \mathbf{t}_i \tau_i, -\frac{\mathbf{y}_i \mathcal{A}_i \eta_i}{T_i} - \mathbf{x}_i \mathcal{A}_i \xi_i + \frac{(\mathcal{A}_i - T_i \mathcal{A}_i) \eta_i \xi_i}{\hbar T_i}, \right. \\ \mathbf{1} + \left( \frac{\hbar \mathbf{y}_i \mathcal{A}_i \eta_i}{T_i} - \frac{\hbar \mathbf{a}_i \mathbf{y}_i \mathcal{A}_i \eta_i}{T_i} - \frac{\hbar \mathbf{y}_i^2 \mathcal{A}_i^2 \eta_i^2}{2 T_i^2} - \hbar \mathbf{a}_i \mathbf{x}_i \mathcal{A}_i \xi_i + \frac{2 \mathbf{a}_i \mathcal{A}_i \eta_i \xi_i}{T_i} - \right. \\ \frac{\hbar \mathbf{x}_i \mathbf{y}_i \mathcal{A}_i^2 \eta_i \xi_i}{T_i} + \frac{(-\mathcal{A}_i + T_i \mathcal{A}_i) \eta_i \xi_i}{T_i} + \frac{\mathbf{y}_i (3 \mathcal{A}_i^2 - T_i \mathcal{A}_i^2) \eta_i^2 \xi_i}{2 T_i^2} - \frac{\mathbf{1}}{2} \hbar \mathbf{x}_i^2 \mathcal{A}_i^2 \xi_i^2 + \\ \left. \left. \frac{\mathbf{x}_i (3 \mathcal{A}_i^2 - T_i \mathcal{A}_i^2) \eta_i \xi_i^2}{2 T_i} + \frac{(-3 \mathcal{A}_i^2 + 4 T_i \mathcal{A}_i^2 - T_i^2 \mathcal{A}_i^2) \eta_i^2 \xi_i^2}{4 \hbar T_i^2} \right) \epsilon + \mathbf{0} [\epsilon]^2 \right]$$