$$\hat{H} = \hat{H}_\mathrm{s} + \hat{H}_\mathrm{E} + \hat{H}_\mathrm{SE} \tag{1}$$

$\hat{H}_\mathrm{E}$

$\hat{H}_\mathrm{s} = \Omega\,\mathbf{h}\cdot\hat{\boldsymbol{\sigma}}$

$$\hat{H}_\mathrm{SE} = \chi(t)\,\boldsymbol{\alpha}\cdot\hat{\boldsymbol{\sigma}}\otimes\hat{O}. \tag{2}$$

$\mathbf{h}\cdot\hat{\boldsymbol{\sigma}}$ $\boldsymbol{\alpha}\cdot\hat{\boldsymbol{\sigma}}$ $\mathbf{h}$ $\boldsymbol{\alpha}$ $\hat{O}$ $\chi(t)$ χ

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