(a)
$$\mathbf{h}^{\mathrm{K}S}_{\mathbf{k}}, \Delta \mathbf{H}_{\mathbf{k}}, \hat{
ho}_{0}$$

For $\Omega_1 < \omega_L < \Omega_2$ do:

(b) integration of equation of motion

$$i|\dot{v}_{\mathbf{k},m}\rangle = \left(\hat{H}_{\mathbf{k}}^{0} + \hat{w}_{\mathbf{k}}(\mathbf{\mathcal{E}}) + \hat{w}_{\mathbf{k}}^{\dagger}(\mathbf{\mathcal{E}})\right)|v_{\mathbf{k},m}\rangle$$
with $\mathbf{\mathcal{E}}(t) = \mathbf{\mathcal{E}}_{0}\sin(\omega_{L}t)$



(c)

$$S_{m,n}(\mathbf{k},\mathbf{k'}) = \langle v_{m,\mathbf{k}} | v_{n,\mathbf{k'}} \rangle \to \mathbf{P}(t)$$

Post-processing

(d) (non)linear optical properties by

inverting
$$\mathcal{F}_{in}\mathbf{p}(n\omega_L) = \mathbf{P}(t_i)$$