

$$P'_{\mathbf{x}} = (a - \frac{1}{2}\Delta a_{\mathbf{k}})e^{i\mathbf{k}\cdot\mathbf{x}} + f\tilde{P}_{\mathbf{x}}$$

$$P''_{\mathbf{x}} = (a + \frac{1}{2}\Delta a_{\mathbf{k}})e^{i\mathbf{k}\cdot\mathbf{x}} + f\tilde{P}_{\mathbf{x}}$$