$$i\hbar\partial_t\hat{\varphi} = \left(-\frac{\hbar^2}{2m}\nabla^2 - \mu + g_0\hat{\varphi}^{\dagger}\hat{\varphi}\right)\hat{\varphi} + \frac{g_1}{\hbar^2}\hat{\varphi}^{\dagger}\boldsymbol{f}\hat{\varphi}\cdot\boldsymbol{f}\hat{\varphi} + \frac{g_2}{2}(N_{00}\hat{\varphi}^{\dagger}\hat{\varphi}N_{00})\hat{\varphi}$$