$$\hat{H} = \sum_i^N \frac{\hat{\mathbf{p}}^2}{2m_e} + \sum_i^N V_\mathrm{r}(\vec{r}_i) + \sum_i^N V_\mathrm{CF}(\vec{r}_i) + \sum_{i>j}^N \frac{e^2}{|\vec{r}_j - \vec{r}_i|} + \sum_i^N \zeta(r)\hat{L}_i \cdot \hat{S}_i$$