Starting from

$$\Upsilon_A^{J\pi} = \sum_{\alpha[K]} u^{\alpha}_{[K]}(\rho)\, B^{J\pi}_{\alpha[K]}(\Omega)$$

The Sch. eq. is

$$H\, \Upsilon_A^{J\pi} = E\, \Upsilon_A^{J\pi}$$

projecting on a generic state $B_{\alpha'[K']}$

$$\left\{-\frac{\hbar^2}{m}\left[\frac{\partial^2}{\partial\rho^2} + \frac{3N-1}{\rho}\frac{\partial}{\partial\rho} - \frac{K(K+3N-2)}{\rho^2}\right] - E\right\} u^{\alpha}_{[K]}(\rho)$$

$$+ \sum_{\alpha'[K']} \langle B^{J\pi}_{\alpha[K]} | V | B^{J\pi}_{\alpha'[K']} \rangle\, u^{\alpha'}_{[K']}(\rho) = 0$$

The matrix $\langle B^{J\pi}_{\alpha[K]} | V | B^{J\pi}_{\alpha'[K']} \rangle = V_{\alpha K, \alpha' K'}$

could be very big.

For example in the DVR a first step was the calculation of $\Upsilon_j^{DVR}(r)$. Then a reduced problem has been solved