We will encounter the spin sums

$$\sum_s u_s(\vec{p})\,\bar{u}_s(\vec{p}) = D \sum_s u_s(\vec{0})\,\bar{u}_s(0)\, D^{-1}$$

$$\sum_s u_s(\vec{0})\,\bar{u}_s(\vec{0}) = m \sum_s \begin{pmatrix} \xi_s \\ \xi_s \end{pmatrix} (\xi_s^+ , \xi_s^+)\,\gamma^0$$

$$= m \sum_s \begin{pmatrix} \xi_s \xi_s^+ & \xi_s \xi_s^+ \\ \xi_s \xi_s^+ & \xi_s \xi_s^+ \end{pmatrix} = m \begin{pmatrix} \mathbb{1} & \mathbb{1} \\ \mathbb{1} & \mathbb{1} \end{pmatrix} = m(\gamma^0 + 1)$$

$$= (\not{k} + m)$$

We had $D^{-1} \gamma^\mu D = \Lambda^\mu{}_\nu \gamma^\nu \Rightarrow D^{-1} \gamma_\mu D = (\Lambda^{-1})^\nu{}_\mu \gamma_\nu$

$$D \not{k} D^{-1} = k^\mu D \gamma_\mu D^{-1} = k^\mu \Lambda^\nu{}_\mu \gamma_\nu$$

$$= p^\nu \gamma_\nu = \not{p} \qquad \Rightarrow$$

$$\boxed{\sum_s u_s(\vec{p})\,\bar{u}_s(\vec{p}) = \not{p} + m}$$

similarly for $v$:

$$\sum_s v_s(\vec{0})\,\bar{v}_s(\vec{0}) = m \sum_s \begin{pmatrix} \eta_s \\ -\eta_s \end{pmatrix} (\eta_s^+ , -\eta_s^+)\,\gamma^0$$

$$= m \sum_s \begin{pmatrix} \eta_s \\ -\eta_s \end{pmatrix} (-\eta_s^+ , \eta_s) = m \sum_s \begin{pmatrix} -\eta_s \eta_s^+ & \eta_s \eta_s^+ \\ \eta_s \eta_s^+ & -\eta_s \eta_s^+ \end{pmatrix}$$

$$= m \begin{pmatrix} -\mathbb{1} & \mathbb{1} \\ \mathbb{1} & -\mathbb{1} \end{pmatrix} = m(\gamma^0 - 1) = \not{k} - m \qquad \Rightarrow$$

$$\boxed{\sum_{s=1}^{2} v_s(\vec{p})\,\bar{v}_s(\vec{p}) = \not{p} - m}$$