

The electron spin polarization obeys

$$\left\langle \vec{S}(\mathbf{r}, \tau) \right\rangle = \vec{\varphi}(\mathbf{r}, \tau) e^{i\mathbf{K} \cdot \mathbf{r}}$$

where $\mathbf{K} = (\pi, \pi)$ is the ordering wavevector.