

$$A_{UT} \sin(\phi_{RS}) = \frac{1}{P} \frac{\sqrt{N^{\uparrow}(\phi_{RS})N^{\downarrow}(\phi_{RS} + \pi)} - \sqrt{N^{\downarrow}(\phi_{RS})N^{\uparrow}(\phi_{RS} + \pi)}}{\sqrt{N^{\uparrow}(\phi_{RS})N^{\downarrow}(\phi_{RS} + \pi)} + \sqrt{N^{\downarrow}(\phi_{RS})N^{\uparrow}(\phi_{RS} + \pi)}}$$