

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