$$A_{UT}^{\sin(\phi+\phi_S)} \equiv 2\,\frac{\displaystyle\int \mathrm{d}\phi\,\mathrm{d}\phi_S\,[\mathrm{d}\sigma^{\uparrow} - \mathrm{d}\sigma^{\downarrow}]\,\sin(\phi+\phi_S)}{\displaystyle\int \mathrm{d}\phi\,\mathrm{d}\phi_S\,[\mathrm{d}\sigma^{\uparrow} + \mathrm{d}\sigma^{\downarrow}]}$$