**Spin Wheel**

Problem 1: orbit separation measurement precision.

Apparently, the CW vs CCW beams' vertical orbit separation can be measured with sufficient precision using commercially-available SQUID-based magnetometers. [1]

They suggest either keeping the orbit separation to less than 2 pico-meters, or just measuring the separation to that precision. The first approach fails is applicable for the classical FS method, but it fails b/c it implies absence of radial magnetic field, hence unstable invariant spin axis, hence geometric phase error.[[1]](#footnote-2)

The second approach works for the spin wheel method.

**References**

[1] <https://apps.fz-juelich.de/pax/paxwiki/images/a/a9/DKawal_longapp_dmk_20110621.pdf>

1. We can compensate the constant imperfections radial magnetic field, but not field fluctuations. If the fluctuations occur at an amplitude higher than femto-T, they'll dominate the measurement. [↑](#footnote-ref-2)