Precise Magnet Girder Position Monitoring at the Swiss Light Source (SLS)

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SUMMARY

In course of a vertical realignment campaign of the SLS storage ring in 2011 with the emphasis to minimize the vertical electron beam emittance, it became apparent that the Hydrostatic Leveling System (HLS) can not only be used for the detection of long term settlements as it was designed for but also for monitoring deliberate girder position manipulations with the remotely controlled girder alignment system of the SLS. Since then electron beam-based measurements, alignment survey data and HLS data have been compared and found to be consistent over a large range of time scales from seconds to years. A recent software upgrade allows a smooth integration with the SLS controls system and guarantees future HLS hardware compatibility.