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SHORT-TERM CONTINUOUS MONITORING OF EXPERIMENTAL FLOOR ABOVE TUNNELS OF NSLS-II

Along with the long-term settlement monitoring activities of NSLS-II, the truck tunnel and utility tunnel areas, which are used for the passing of equipment, pipes and cables around storage ring tunnel, showed significant changes along with time. The changing trends in several years will be shown and more than half millimeter changes can be seen in the transverse direction of truck tunnel.

Although comprehensive plans have been in place for the long-term settlement of NSLS-II, there is no equipment to measure the settlement continuously.

In order to investigate the changes in short term, new approaches need to be used. Knowing systems include Hydraulic levelling system (HLS), wire position system (WPS) etc. As those systems are not readily available, multiple laser trackers are used to take measurement. The basic idea is to measure several monuments periodically with several trackers at the same time so that better measurement accuracy can be achieved.

Besides those two suspectable areas, a similar set up around 12 ID beam line is established. Since it's relatively stable area, the measurement result there will be used as base line information to estimate the measurement precision of the approach. A measurement accuracy of several micron is seen.

Although the temperature in the experimental floor is well controlled and the temperature is compensated when the measurements are taken, outside temperature changes along time shows impact to the observation result. There are both hourly and daily changes in the elevation direction of the floor above truck tunnel.

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