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<b>Proposal for an HLS Measurement System at ID6 - S11</b>		
Authors: File:	Georg Gassner, Catherine LeCocq Proposed Spear HLS System.doc	

## ***1. Motivation***

Around BL6 a loss of beam occurs. One possible reason for the loss is a floor movement around this area. To investigate if there is a problem related to floor movement we propose to install a Hydrostatic Leveling System (HLS) around ID6.

## ***2. Test Setup***

The setup consists of 3 HLS sensors distributed around ID6, see Figure 1 and Figure 3. The sensors are connected with a 1.5 inch PVC pipe supported by brackets. The brackets are glued to the floor. Since the pipe is half filled with water the pipes must be installed leveled.

The sensors (4inch diameter, 6 inch height, see Figure 2) are connected to an Ethernet switch with PoE (Power over Ethernet) with CAT5 cables (IEEE 802.3f) which must not be longer than 100 m. The sensors must be connected to a UPS since they have to be permanently heated to avoid damage. The data collecting computer with the UPS can outside the SPEAR ring anywhere in the network.

## ***3. Expected Results***

The HLS Sensors allow measurements at an accuracy level of about one micrometer. Due to the setup close to working machines which will cause vibrations and drifts in the temperature an accuracy level of 20 micrometer is more realistic. The maximum sampling period of the sensors is 2 seconds, but since we only look at slow movements of the floor and the aforementioned vibrations a sampling period of one minute should be sufficient.

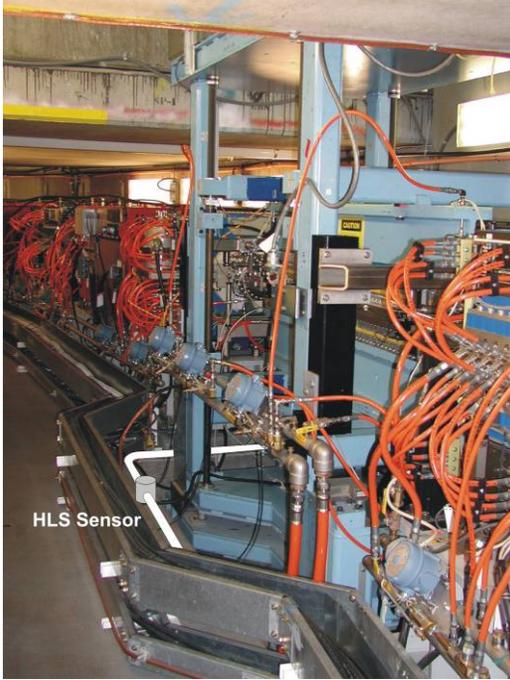


Figure 1: Situation around ID 6 with the position of one sensor

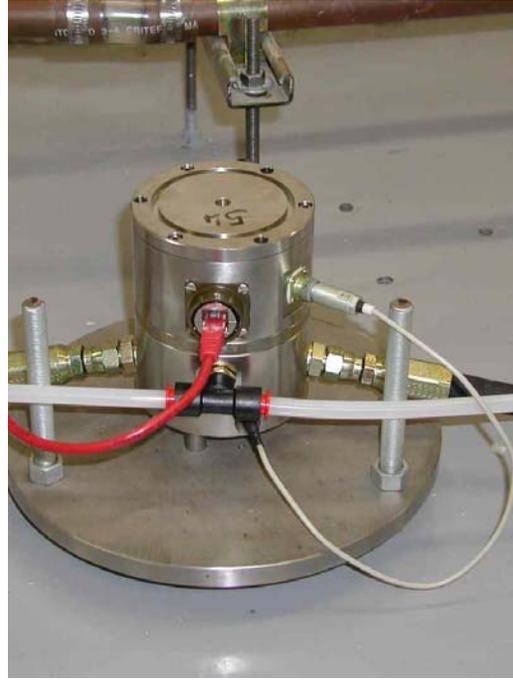


Figure 2: HLS Sensor

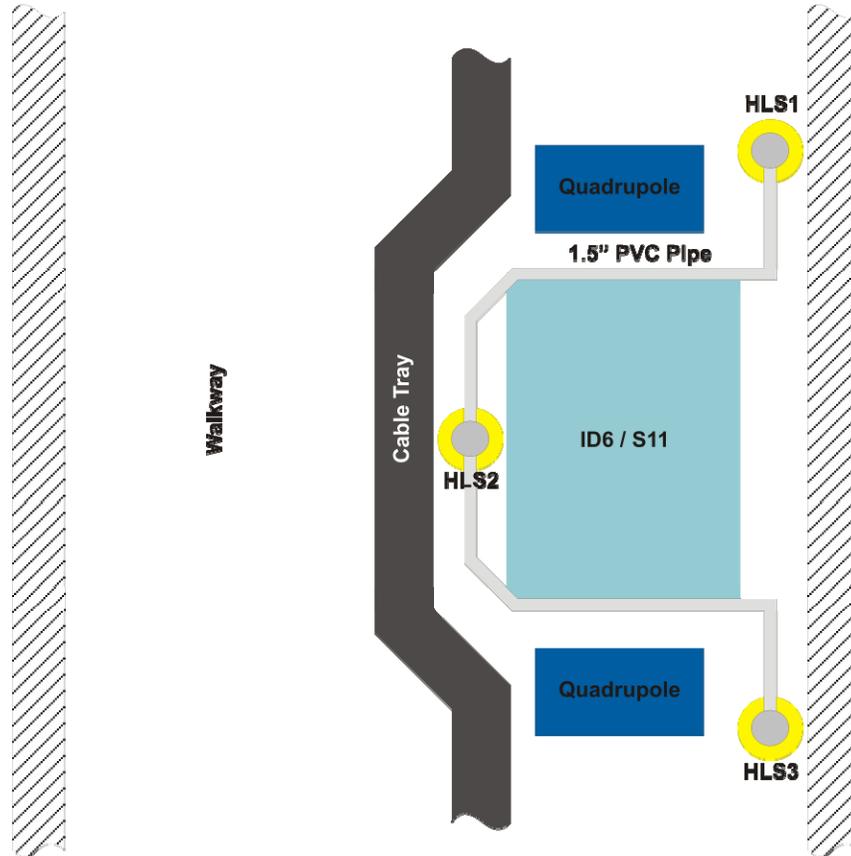


Figure 3: Sketch of the planned set up