

# LBNF Beamline Tech Board Review - Neutrino Beam Instrumentation and Beam-based Alignment

## Overview

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# Beam-based Alignment and Monitoring

- Beam-based alignment is done using:
  - Beam Position Monitors (BPMs) upstream of the target
  - Hadron Alignment Detector System (HADeS) between end of the decay pipe and the absorber
  - Horn cross-hairs + beam loss monitors
- Monitoring of the beam intensity and direction is done using:
  - Target Position Thermometer (TPT) for an independent measurement of the primary beam position on the target
  - Muon Monitor System (MuMS) to track changes in tertiary beam intensity and direction
- Horn Leveling System (HLS) to monitor the vertical positions of the target and horns

# Alignment

1. Establish beam direction via HADeS measurements
2. Establish alignment of horns B&C w/ no target via BLM measurements of scattering off of cross hairs
3. Establish alignment of target+horn A via HADeS and BLM measurements of scatter off edges of bafflette and target

# Order of talks for today

1. Zarko: Cross-hairs and TPT
2. Sudeshna: HLS
3. Jon: HADeS and MuMS

- Note: we are planning on spending more time explaining the HLS, as this is pretty new and unfamiliar to many.
- Note 2: we hope there will be plenty of time for discussion, and we look forward to your feedback!