

MINOS+ Special Running Needs

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Special Running for Software Checkout

- Change in energy, intensity, will significantly increase demands on Near Detector Software.
- MINOS+ Reconstruction Group addressing these demands
 - Speed
 - Control of overlap, pileup
 - Current testing on MC and ME data
- New algorithms and optimizations should be benchmarked with real target at low intensity.
- Request is based on previous successful study.
- We request approximately $2.5 \text{ E}17$ POT to be taken over about 4 days (adequate numbers of pulses matter).

Special Running for Beam Studies

- MINOS and MINOS+ use near detectors to reduce the uncertainties from beam fluxes and detector effects.
- Strategy has been, and continues to be to keep remaining effects bounded by beam studies.
- Also, now cross-experiment NuMI beam group exists.
- Used by MINOS:
 - Standard Low Energy
 - Low energy with different horn current
 - Horn off
 - Medium energy
 - High energy

Horn Configurations affect kinematics of parent particles

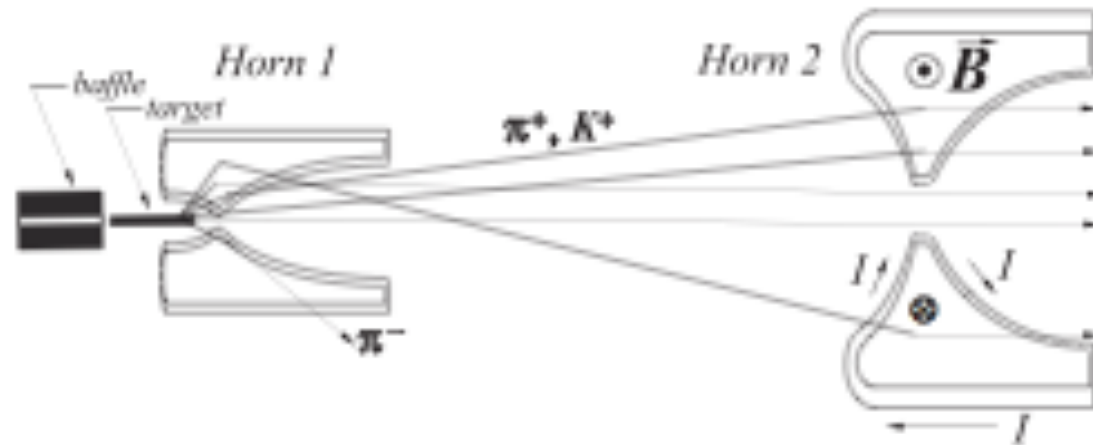


FIG. 2. In the NuMI neutrino beam, horns 1 and 2 are separated by 10 m. A collimating baffle upstream of the target protects the horns from direct exposure to misdirected proton beam pulses. The target and baffle system can be moved further upstream of the horns to produce higher energy neutrino beams [21]. The vertical scale is 4 times that of the horizontal (beam axis) scale.

Request for Horn Off Running

- No realistic possibility to change target positions.
- Of horn current studies, highest priority is completely off.
- MINOS+ requests 5 E18 of HORN OFF data.

Single Horn Operation

- Relatively recent idea, disconnect horn 2
 - Requires new piece of connecting hardware.
 - Hylan, Bourkland aware, have done initial calculations that show it is feasible.
 - 3 days each side to install, remove.
- Possibly of interest, requires study.

Summary of Special Run Requests – MINOS+

- 4 days, approximately $2.5E17$ in LOW INTENSITY
 - To take during early commissioning
- $5 E18$ in HORN OFF mode,
 - Relatively early, i.e once good beam established.
- Be aware of possibility of single horn running.