

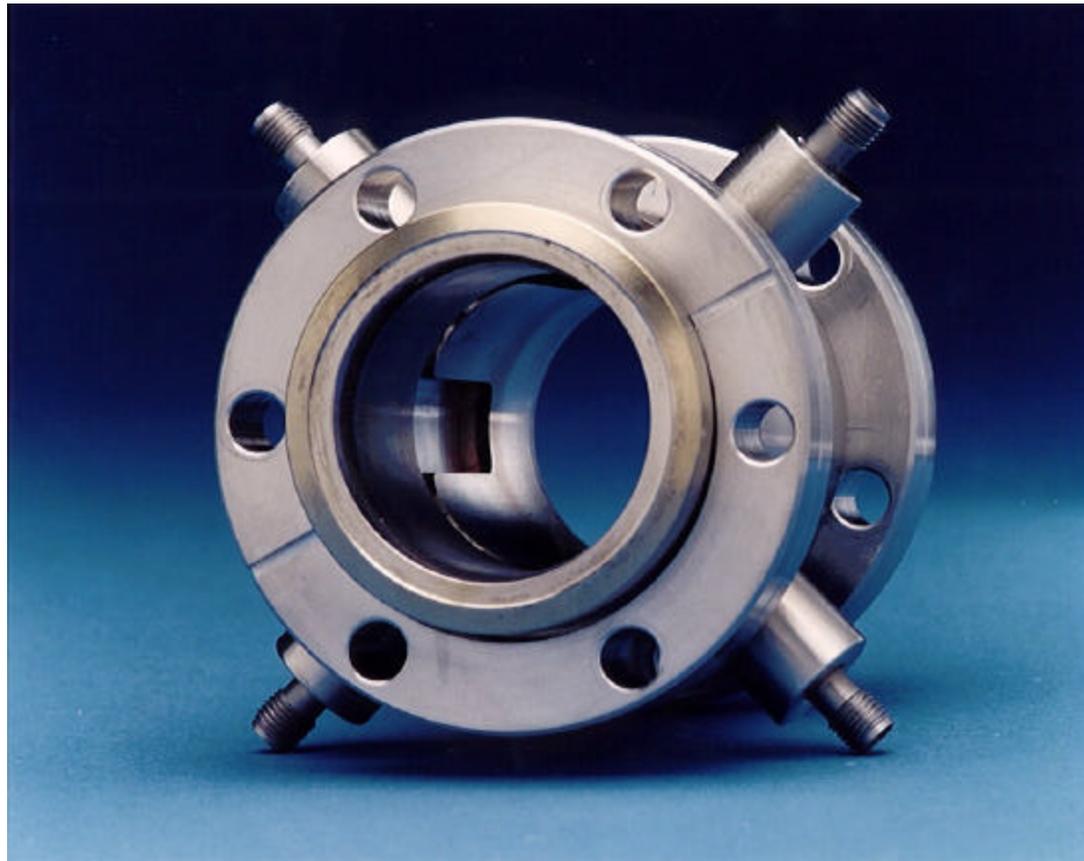
LEUTL BPMs

Bob Lill

DIAGNOSTICS OVERVIEW

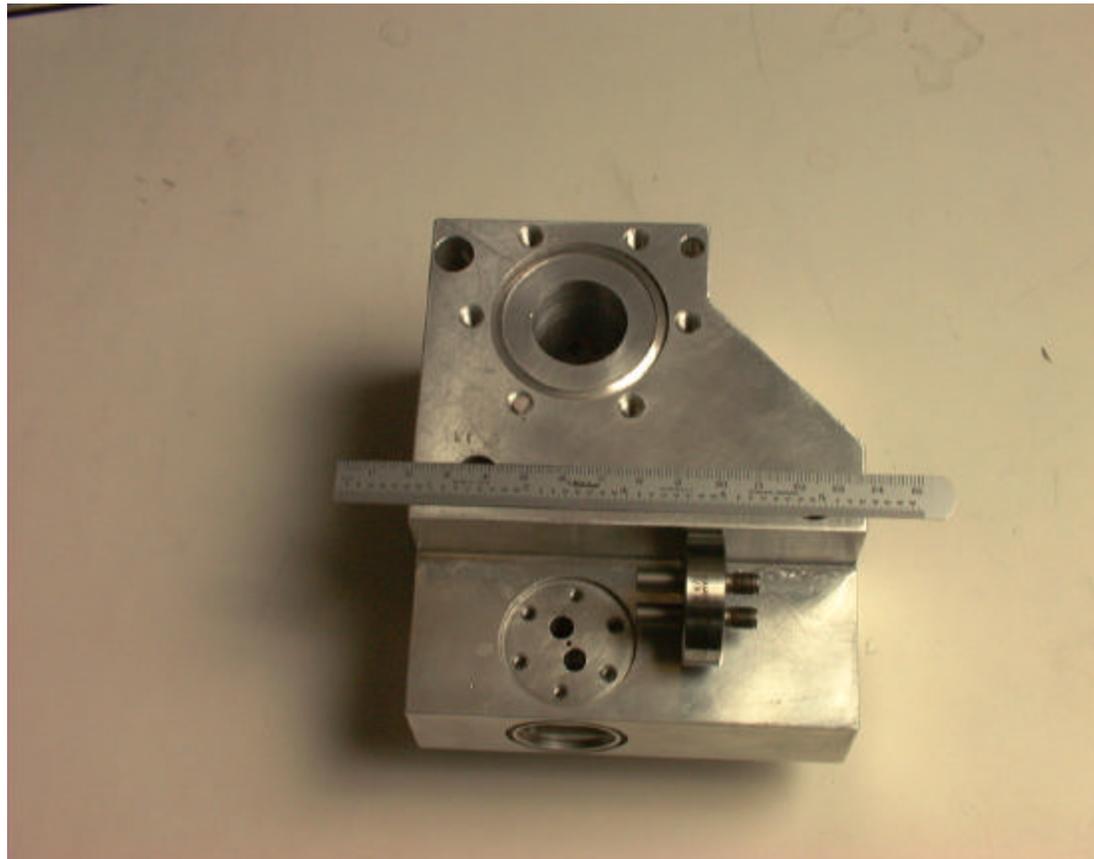
- LEUTL AM/PM BPMs operate per specification with rf and PC gun
- Linac BPM investigation to understand large position movements with PC gun
- Development of a new AM/PM BPM system for LEUTL support

S-Band Stripline BPM

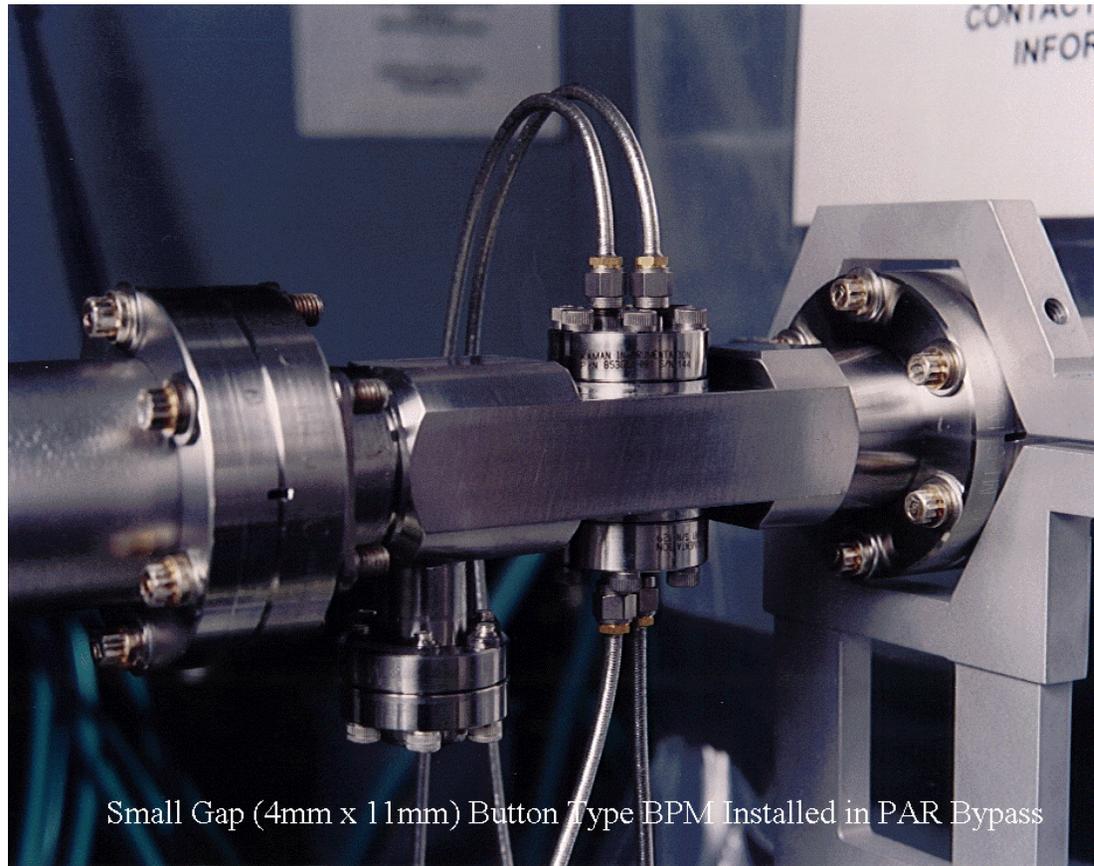


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4 mm Buttons, 8- and 10-mm Vertical Gap BPMs

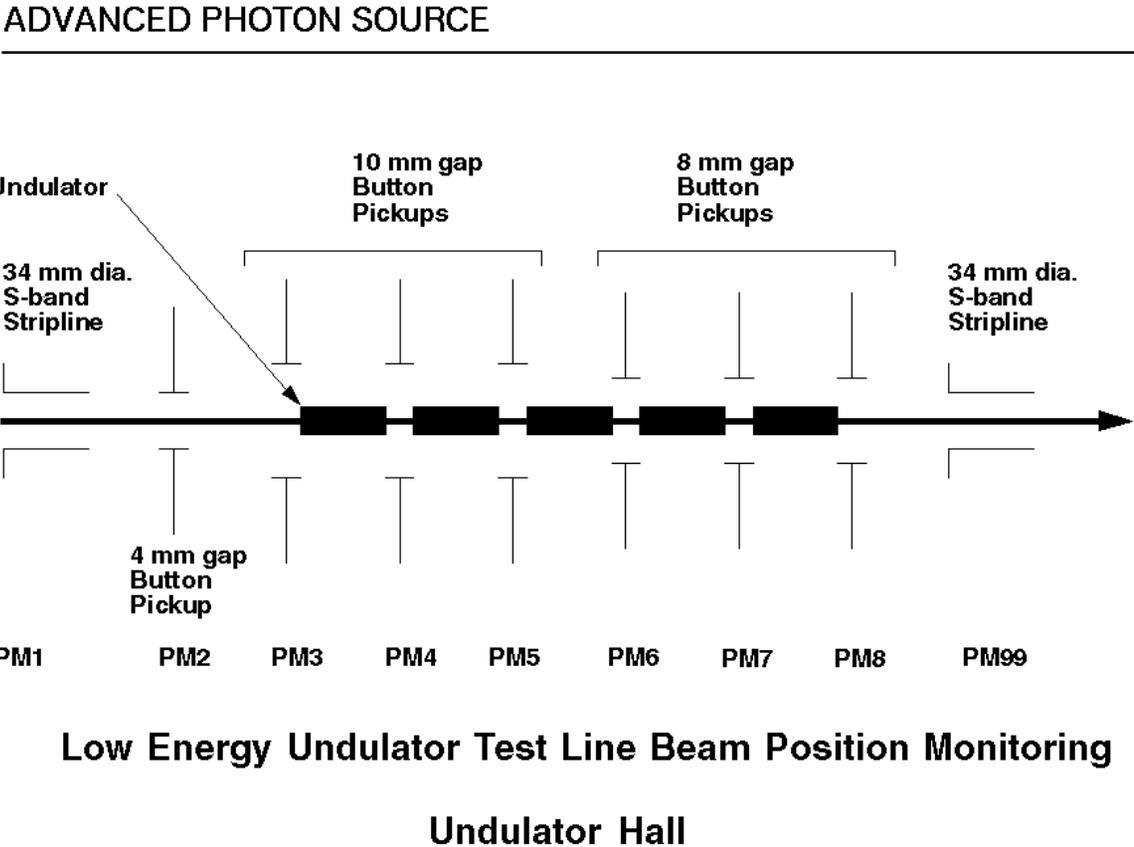


Special Small Gap BPM



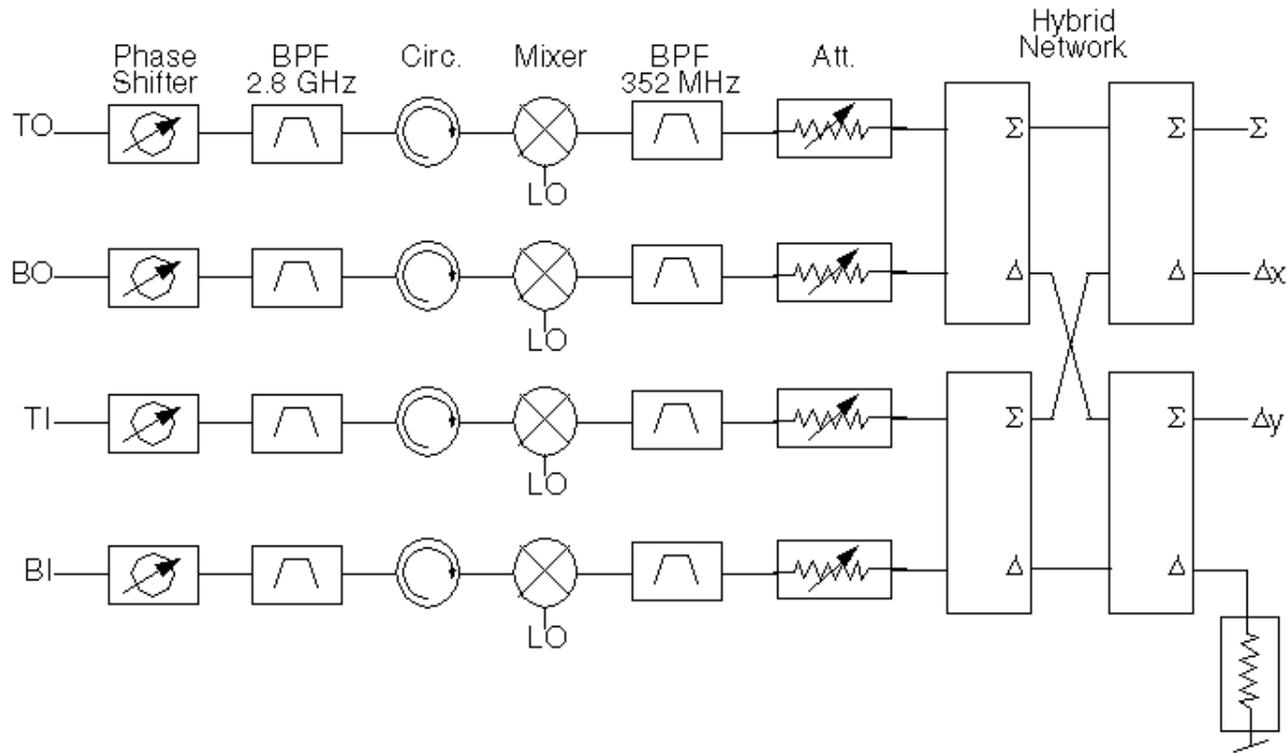
Small Gap (4mm x 1mm) Button Type BPM Installed in PAR Bypass

FEL BPM Locations

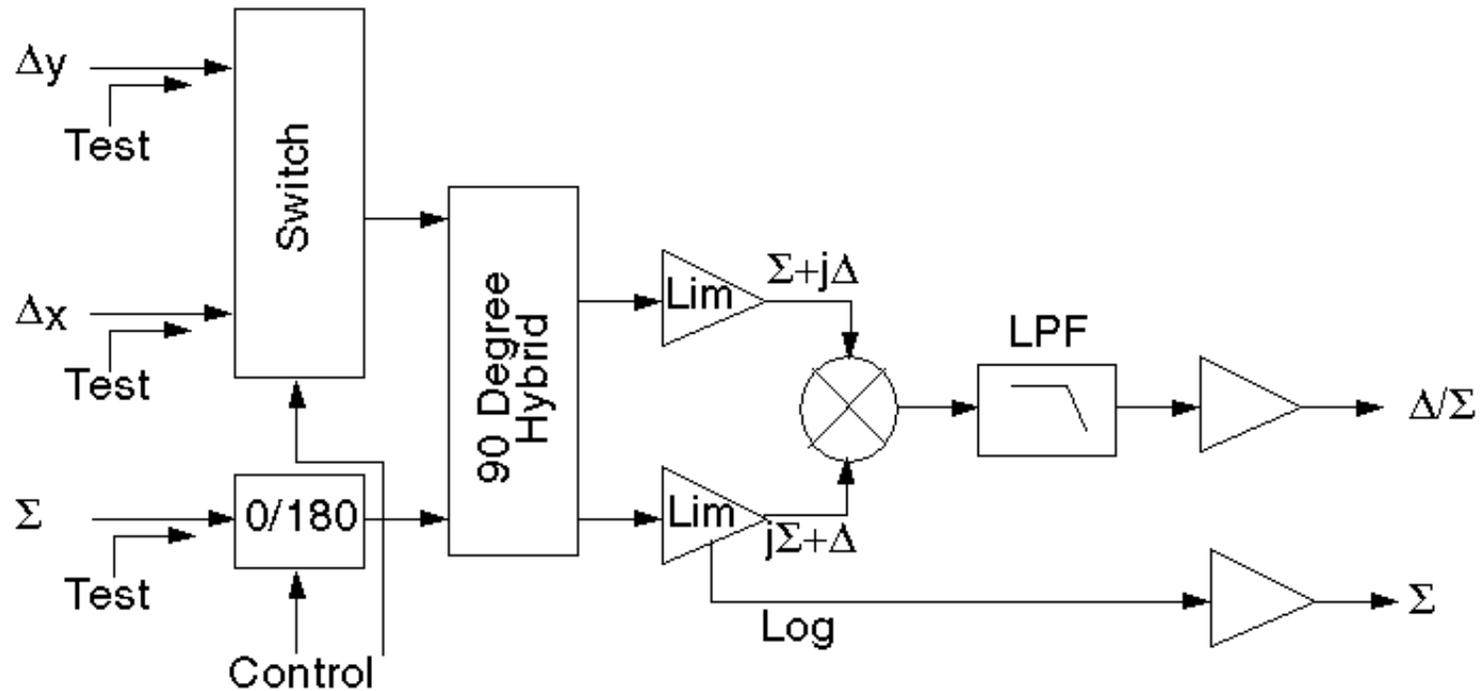


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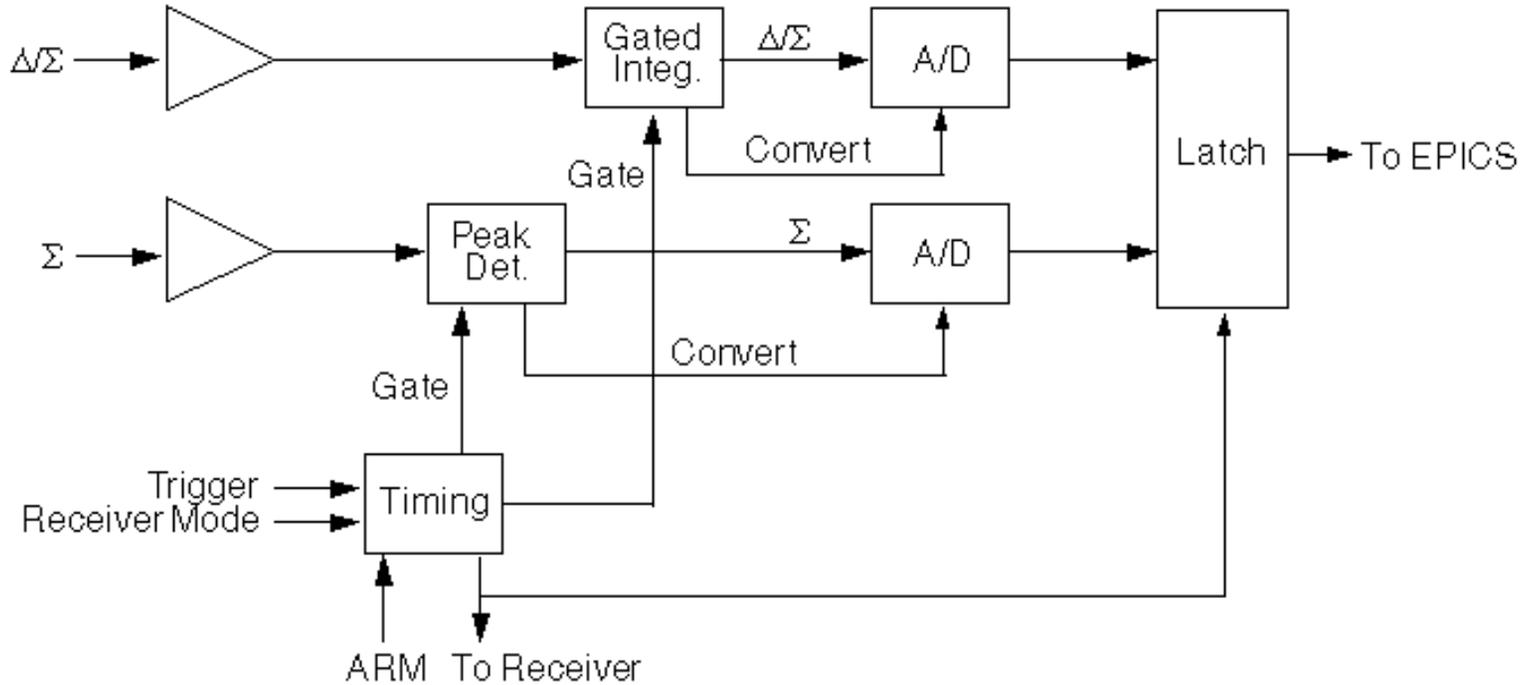
AM/PM Downconverter



Monopulse AM/PM Receiver

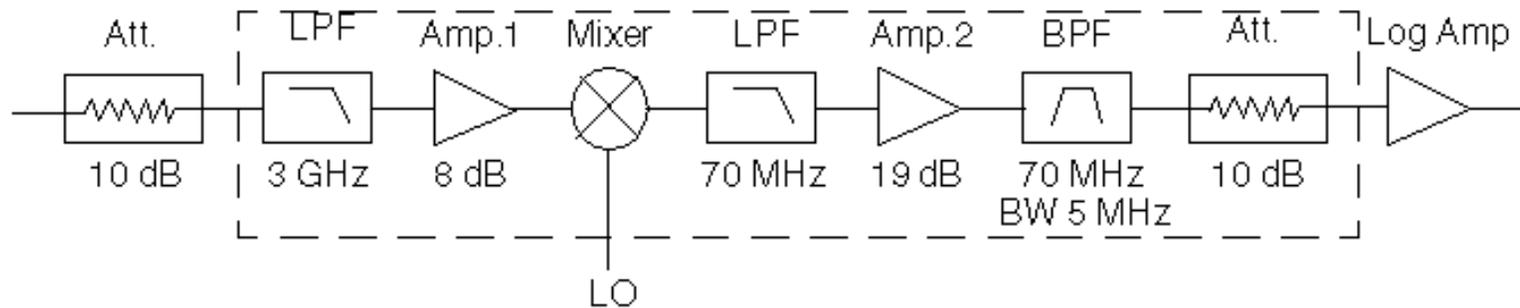


Signal Conditioning and Digitizing Unit



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Linac Log Ratio



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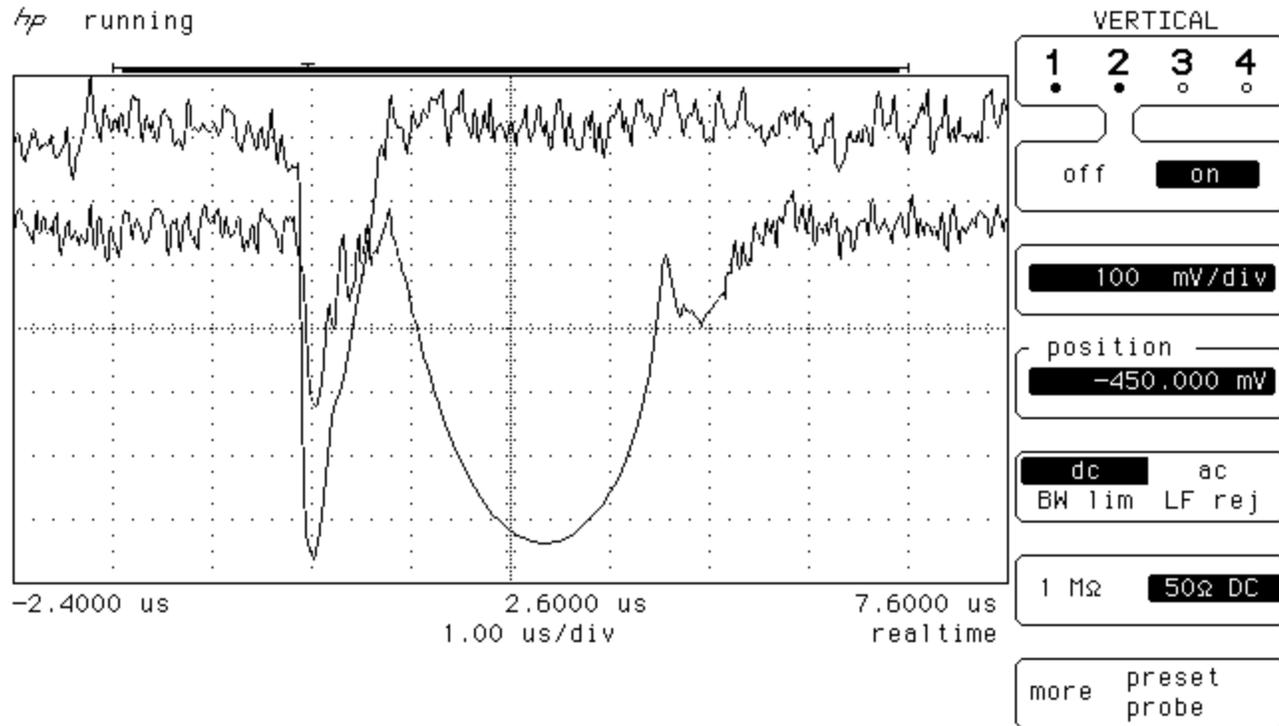
Performance Summary

Location	Pick-up type	Electronics	Sensitivity ($\mu\text{m}/\text{count}$)	Resolution ($\mu\text{m rms}$)	Range ($\pm\text{mm}$)
Linac	S-band stripline	70 MHz IF with Log ratio	X=24.41 Y=24.41	X=10 Y=10	X=15 Y=15
Transport Line	Rotated S-band stripline	350 MHz IF with AM/PM	X=5.35 Y=5.35	X=5.4 Y=5.4	X=10.95 Y=10.95
LEUTL tunnel	10-mm vertical gap buttons	350 MHz IF AM/PM with IF amplifier	X=3.03 Y=1.59	X=4.5 Y=2.4	X=6.20 Y=3.26
LEUTL tunnel	8-mm vertical gap buttons	350 MHz IF AM/PM with IF amplifier	X=2.11 Y=1.37	X=3.2 Y=2.1	X=4.32 Y=2.81
LEUTL tunnel	4-mm vertical gap buttons	350 MHz IF AM/PM with IF amplifier	X=0.89 Y=0.81	X=1.3 Y=1.2	X=1.82 Y=1.66

Planned Upgrades

- Linac downconverter improved filtering
- New low-cost monopulse receiver
- New data acquisition

Filter Response Comparison with PC Gun



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Low-Cost Monopulse Receiver

