

# AGS EXPERIMENT E951

## An R&D Program for Targetry and Capture at a Muon Collider Source

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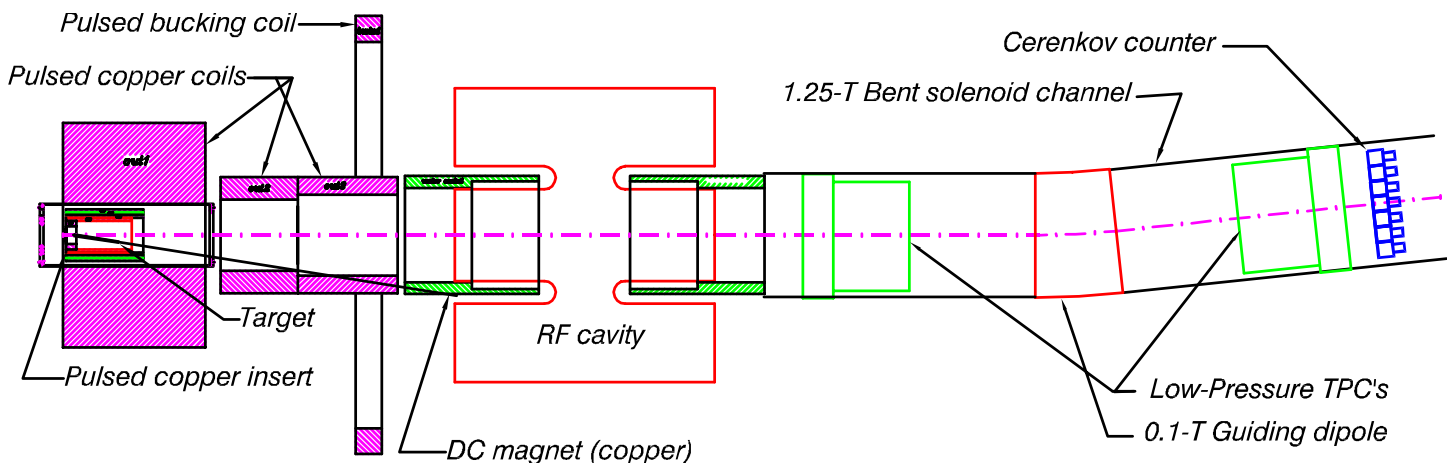
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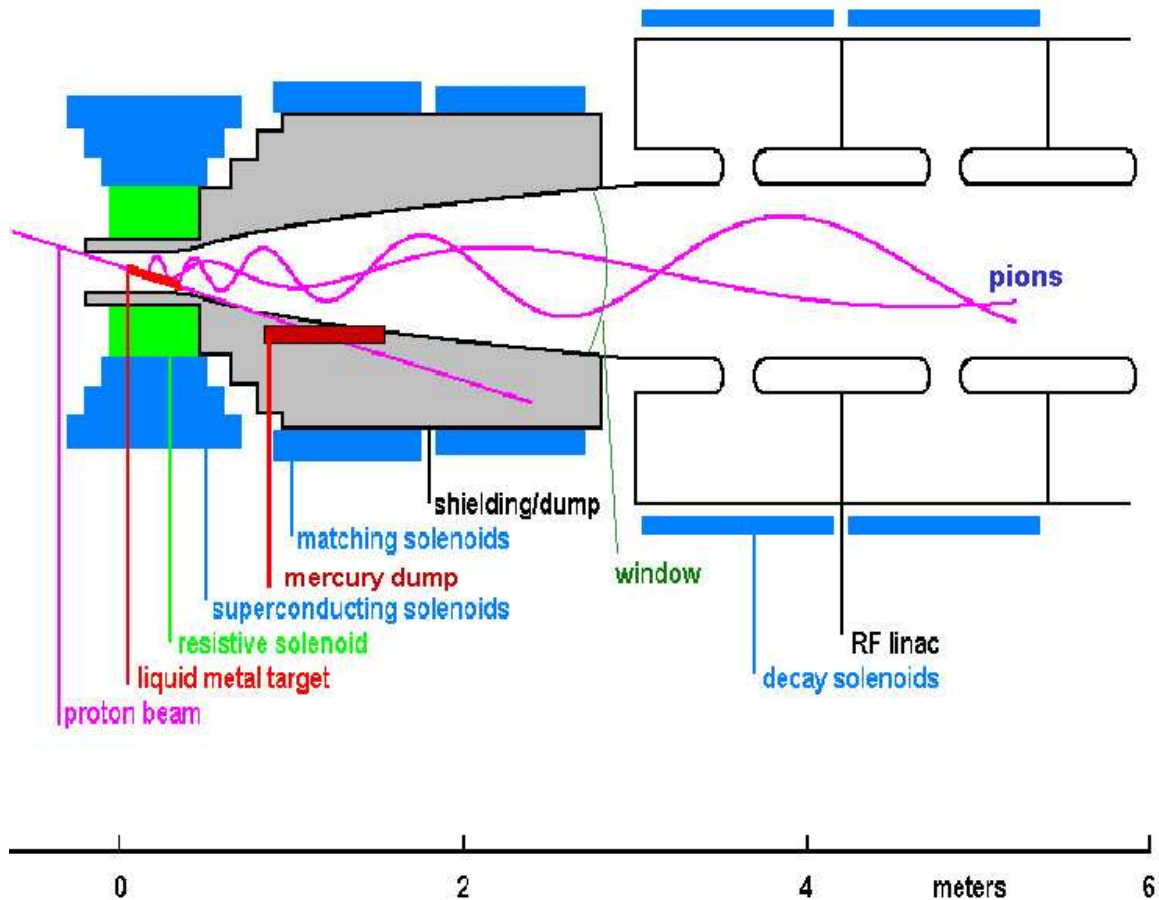
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<http://puhep1.princeton.edu/mumu/target/>

# Requirements for Targetry and Capture at a Neutrino Factory/Muon Collider



- $1.2 \times 10^{14} \mu^\pm/\text{s}$  via  $\pi$ -decay from a 4-MW proton beam.
- Proton pulse  $\approx 1$  ns rms.
- Mercury jet target.
- 20-T capture solenoid followed by a 1.25-T  $\pi$ -decay channel with phase-rotation via rf (to compress energy of the muon bunch).

# Two Classes of Issues

1. Viability of targetry and capture for a single pulse.
2. Long-term viability of the system in a high radiation area.

## E951 Studies the Single Pulse Issues

**Overall Goal:** Test key components of the front-end of a neutrino factory in realistic single-pulse beam conditions.

**Near Term** (1-2 years): Explore viability of a liquid metal jet target in intense, short proton pulses and (separately) in strong magnetic fields.

**Mid Term** (3-4 years): Add 20-T magnet to beam tests; Test 70-MHz rf cavity (+ 1.25-T magnet) 3 m from target; Characterize pion yield.

