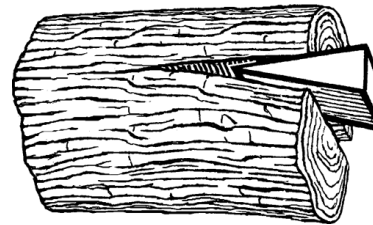


# EGG Injector Tests

- This short presentation presents beam tests we are interested to perform at CEBAF injector (upstream of the gate) in the Fall.
- Important Dates
  - CAB Dry Run for Director's Review (5/23/2013)
  - Director's Commissioning Review (6/6-6/7/2013)
  - Start Ops System Reviews (6/20/2013)
  - Start ACC-I Geographic Reviews (8/23/2013)
  - Accelerator Readiness Review ACC-I (Late August)
  - Long Shutdown Ends (9/16/2013)
  - Hot Checkout Starts (9/18/2013)
  - ACC-I Run Period Starts (11/4/2013)
  - Shutdown for Holiday (12/20/2013)
  - Hot Checkout Starts (1/2/2014)
  - Accelerator Readiness Review ACC-II (Mid February)
  - ACC-II Run Period Starts (2/5/2014)
  - Shutdown for Summer (5/7/2014)
  - Accelerator Readiness Review ACC-III (Late August)
  - ACC-III Run Period Starts (9/22/2014)
  - Shutdown for Holiday (12/19/2014)



Seemingly earliest possibility to "run early" is Oct. 5<sup>th</sup>

This translates into about 4 weeks of opportunistic tests.

Of course, includes turning injector on.

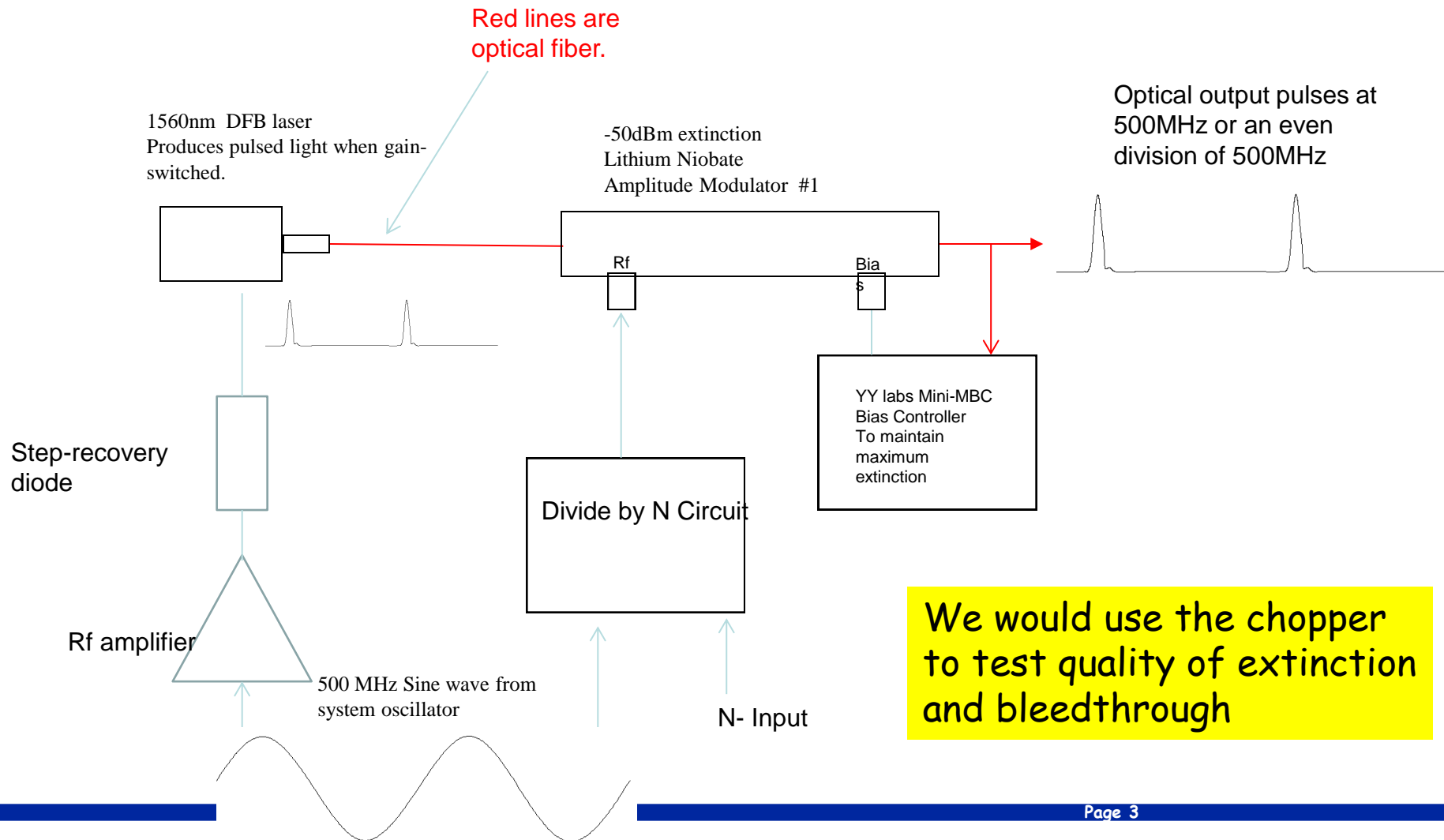
# Beam Tests

- John – prototype pulse picker for 4-hall operation
- Joe – Mott upgrade & re-commissioning experiment
- Joe – INJTWf phase sensitivity improvement & emittance degradation
- Matt – (TBD ~July) Brock Roberts' bunch length monitor 499/1497 MHz
- Riad – (pending PAC40 approval) Bubble chamber

At the end I'll summarize requirements for beam, time, logistics

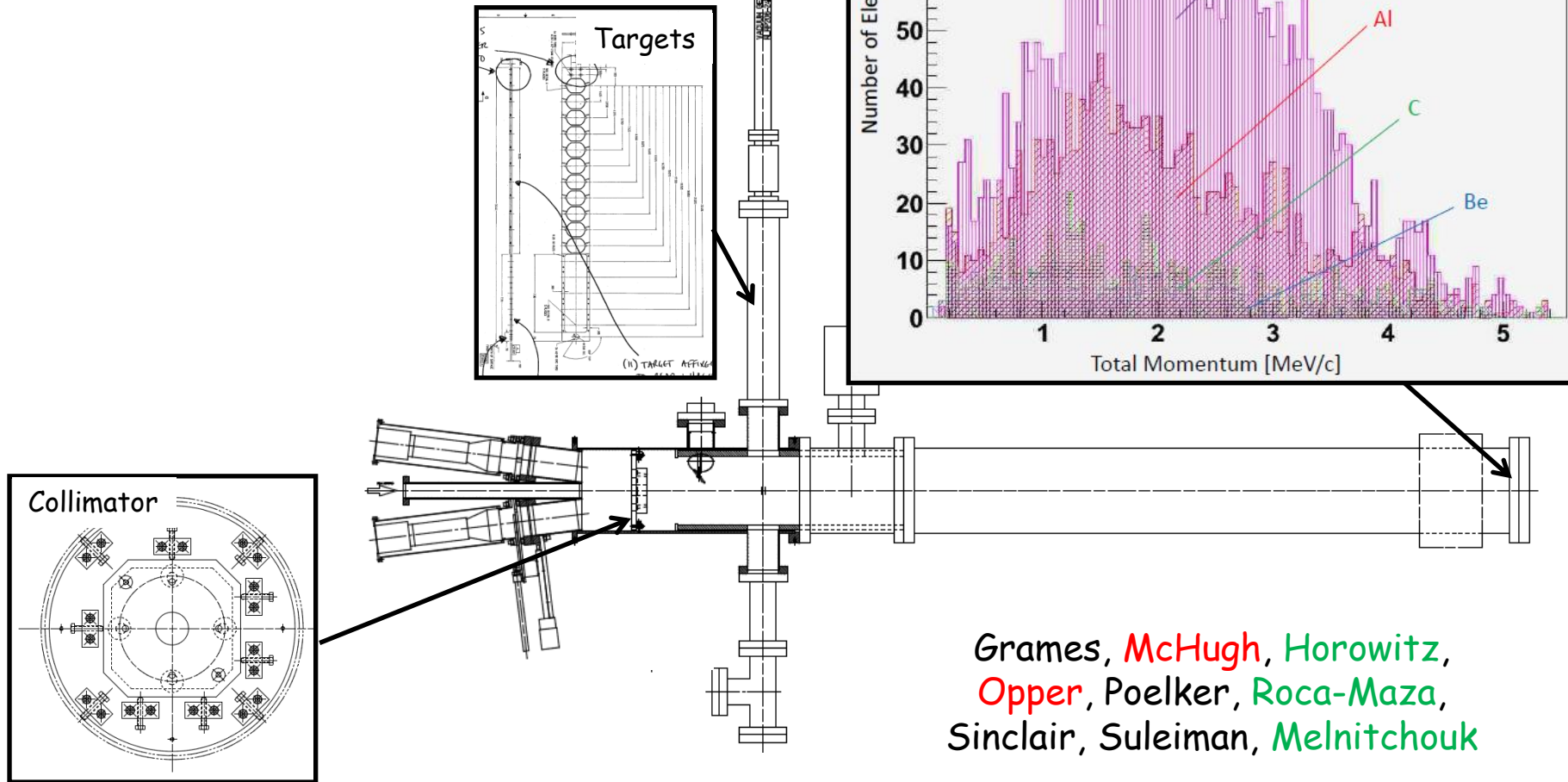
# prototype laser pulse picker (4-hall ops)

A 500MHz pulse train from gain-switched laser diode is modulated by an electro-optic cell. The cell makes a "window" that opens & closes to pass or block laser pulses.



# Mott upgrade and 1% polarimetry

- Reduce background w/ lower Z dump
- Measure systematics of collimator
- Use 10 targets for  $\delta\text{Pol}/\text{Pol} \sim 1\%$
- Use pulse picker: 31 vs 499 MHz



# INJTWF characterization

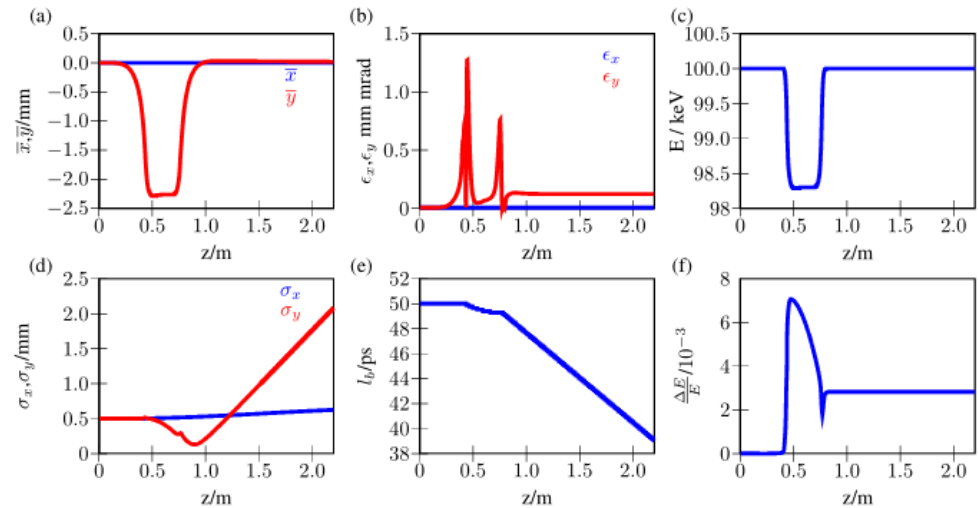
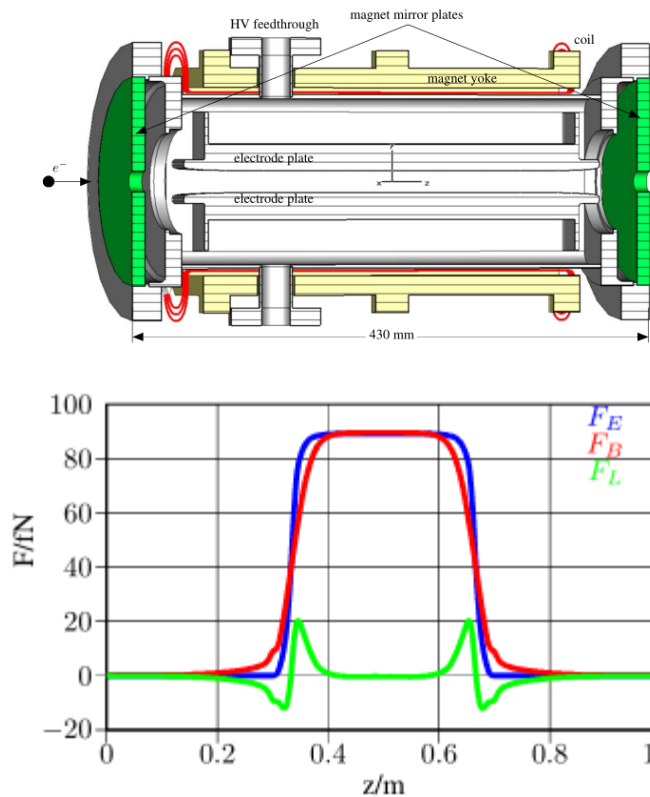


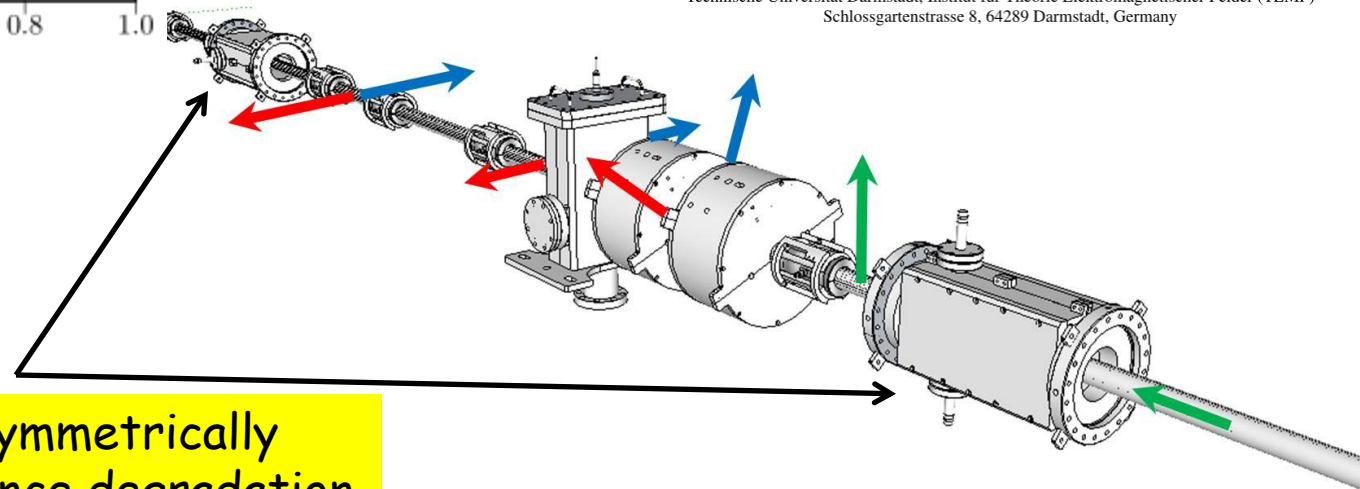
Figure 5: Transverse and longitudinal beam dynamics results through the Wien filter.

MOPAN013

Proceedings of PAC07, Albuquerque, New Mexico, USA

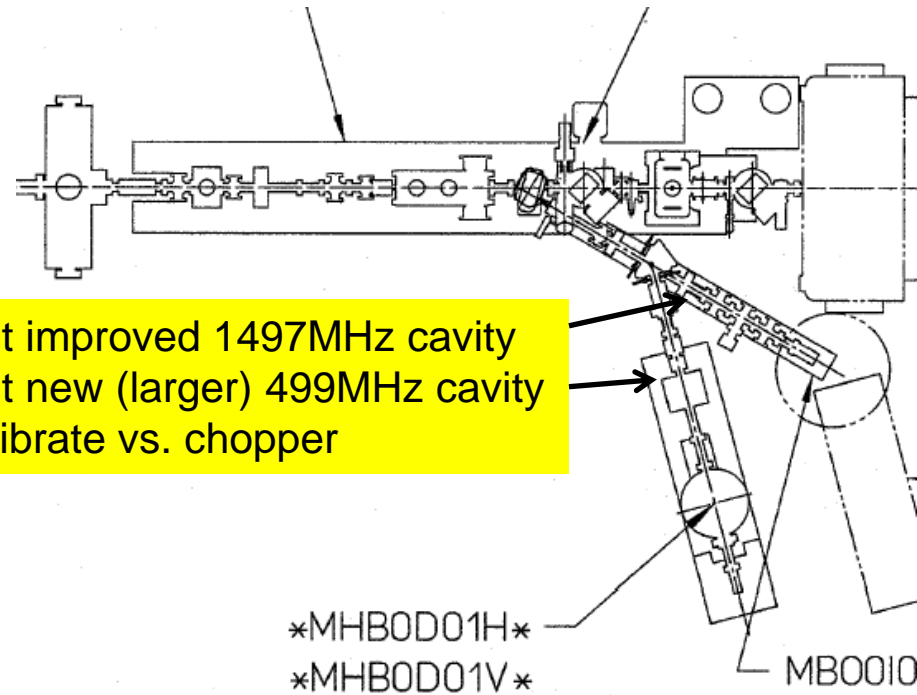
## WIEN FILTER AS A SPIN ROTATOR AT LOW ENERGY \*

B. Steiner<sup>§</sup>, W. Ackermann, W.F.O. Müller, T. Weiland  
 Technische Universität Darmstadt, Institut für Theorie Elektromagnetischer Felder (TEMF)  
 Schlossgartenstrasse 8, 64289 Darmstadt, Germany

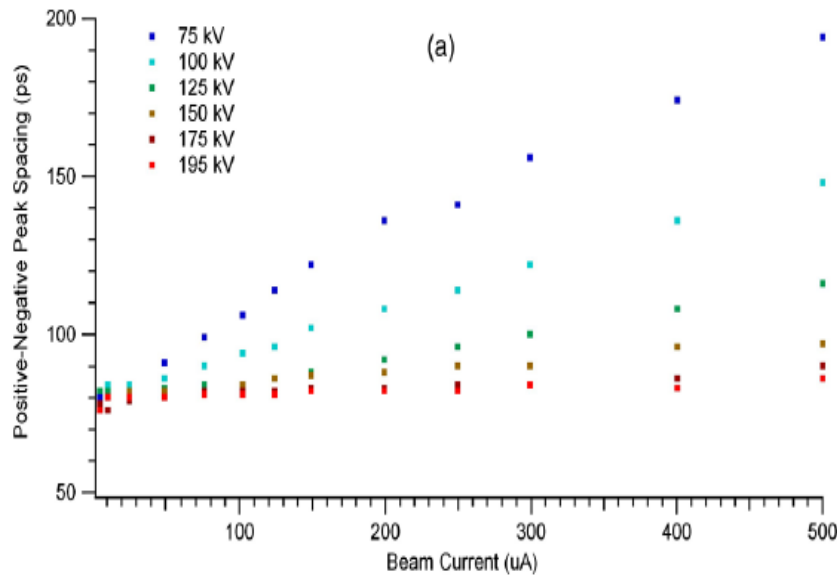


- Power electrodes asymmetrically
- Characterize emittance degradation

# Bunchlength monitor



- Test improved 1497MHz cavity
- Test new (larger) 499MHz cavity
- Calibrate vs. chopper



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## Compact noninvasive electron bunch-length monitor

B. Roberts

*Electrodynamics, 4909 Paseo Del Norte Ne Suite D, Albuquerque, New Mexico 87113, USA*

R. R. Mammei and M. Poelker

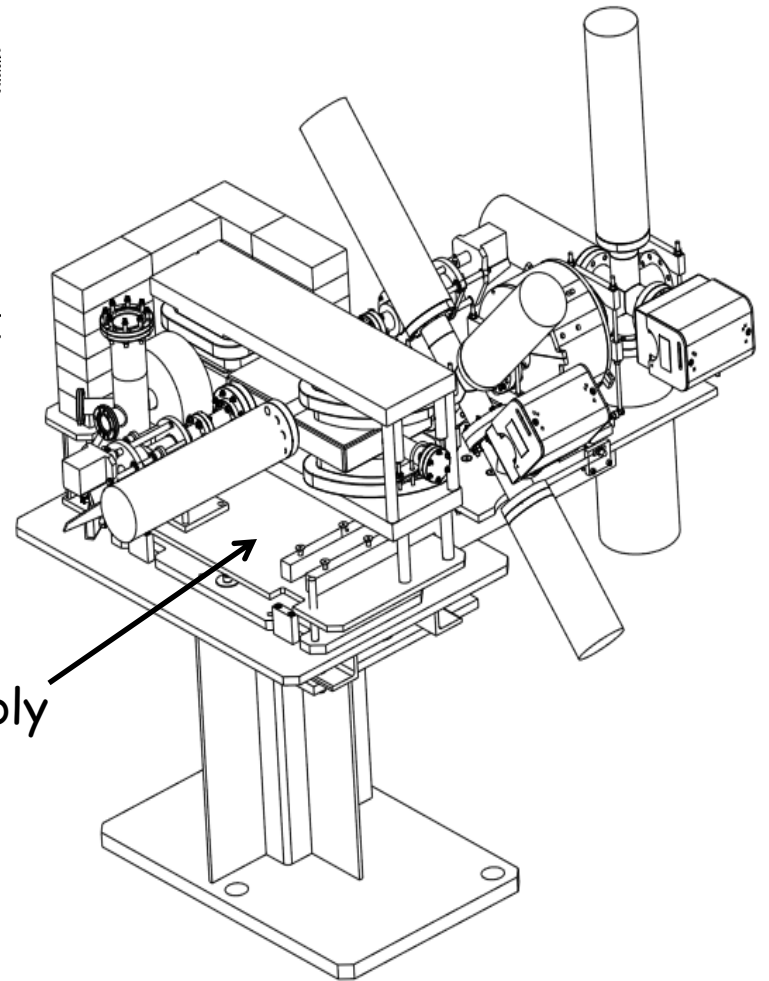
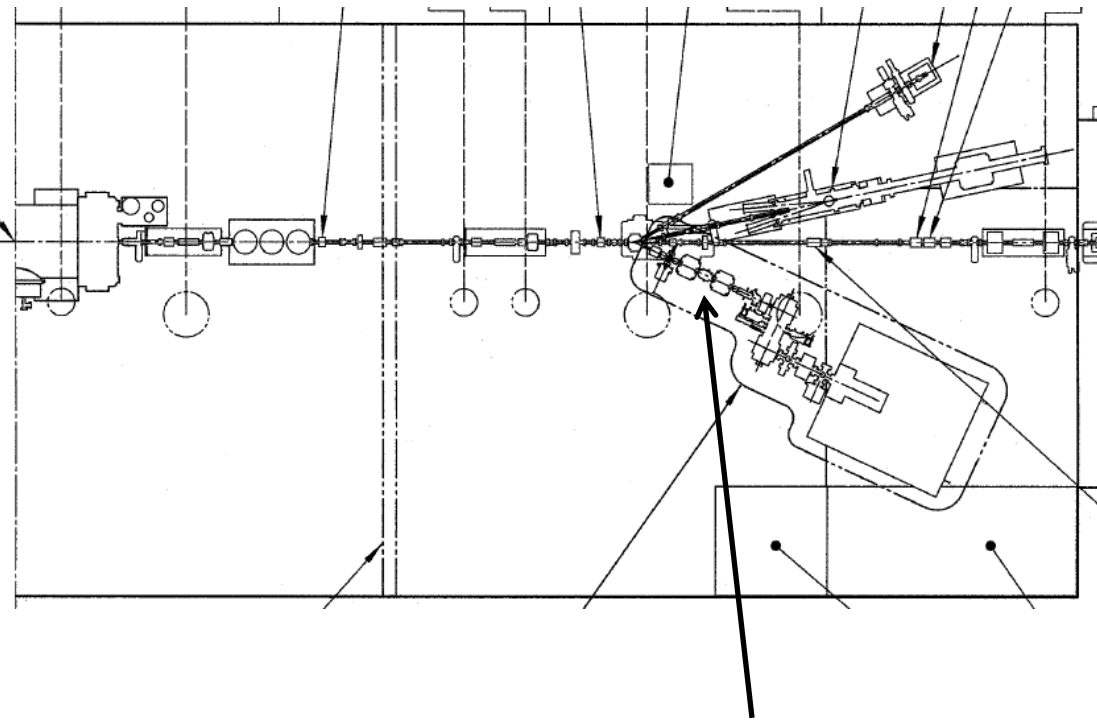
*Thomas Jefferson National Accelerator Facility, 12000 Jefferson Avenue, Newport News, Virginia 23606, USA*

J. L. McCarter

*Department of Physics, University of Virginia, Charlottesville, Virginia 22901, USA*

(Received 6 August 2012; published 26 December 2012)

# PEPPo => Bubble chamber



PEPPo resulted in a new MeV stub beam line

We are ~just completing final removal of assembly



# Bubble chamber

Measure oxygen to carbon rate to learn the carbon to oxygen rate.  
Significant astrophysical importance to production of oxygen in stars.

## Measurement of $^{16}\text{O}(\gamma, \alpha)^{12}\text{C}$ with a bubble chamber and a bremsstrahlung beam

C. Ugalde <sup>\*†</sup>

*The University of Chicago, Chicago, IL 60637 and Argonne National Laboratory, Argonne IL 60439, USA*

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A. Sonnenschein

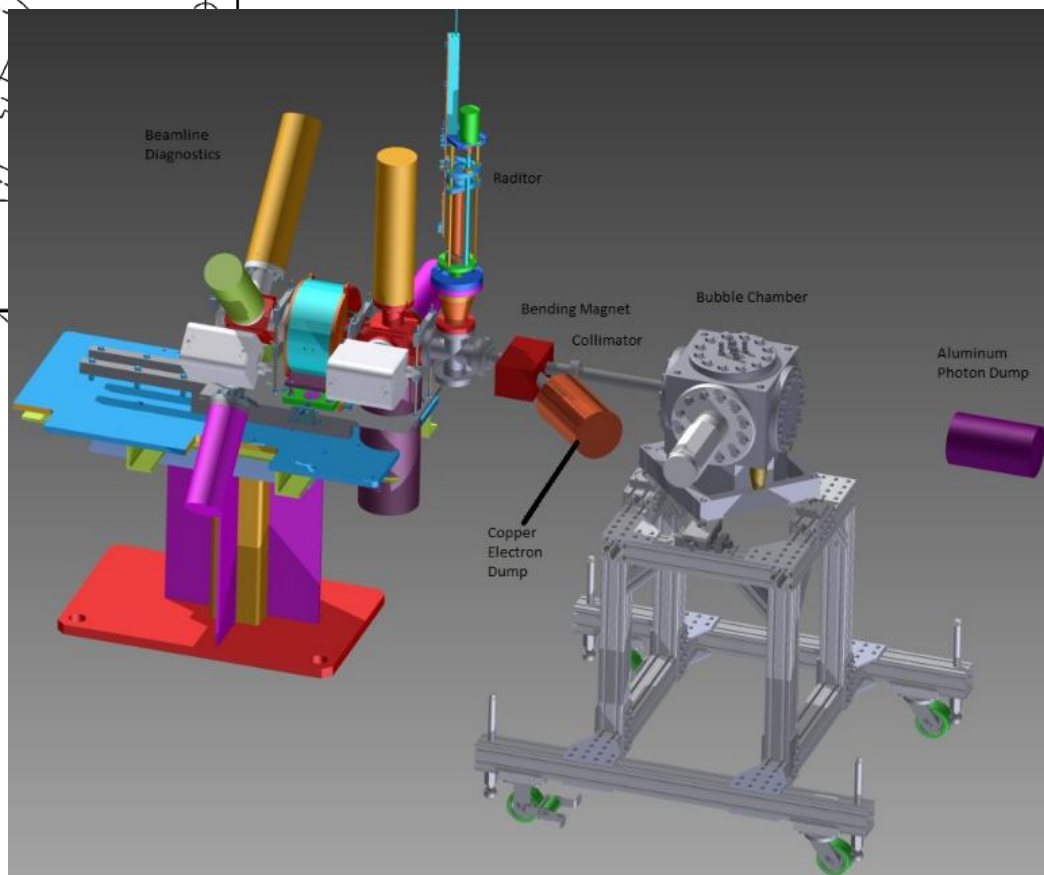
*Fermi National Accelerator Laboratory, Batavia, IL 60510, USA*

A. Robinson

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<sup>†</sup> Co-spokesperson

<sup>\*</sup> Contact: Claudio Ugalde (cugalde@anl.gov)





# Beam Tests Fall 2013 / Winter 2014

Test	Logistics			Beam		Time	
	Status	Region	EOL	Max Energy	Max Current	Shift/Day	Total Shifts
Prototype Pulse Picker	On track	INJ	FC1	500 keV	500uA	1	3
Mott Commissioning	On track	INJ/NL	FC2	8 MeV	20uA	1-2	5
Mott Experiment	On track	INJ/NL	FC2	8 MeV	20uA	2-3	8-10
INJTWF Studies	Ready	INJ	FC1	130keV	100uA	1	5
Bunch length Monitor	TBD July	INJ	FC1	500 keV	500uA	1	5
Bubble Chamber	Fall install Beam 2014	INJ/NL	FC2	8 MeV	100 uA	TBD	TBD