

LINAC 2012

R&D TOWARDS CW ION LINACS AT ANL

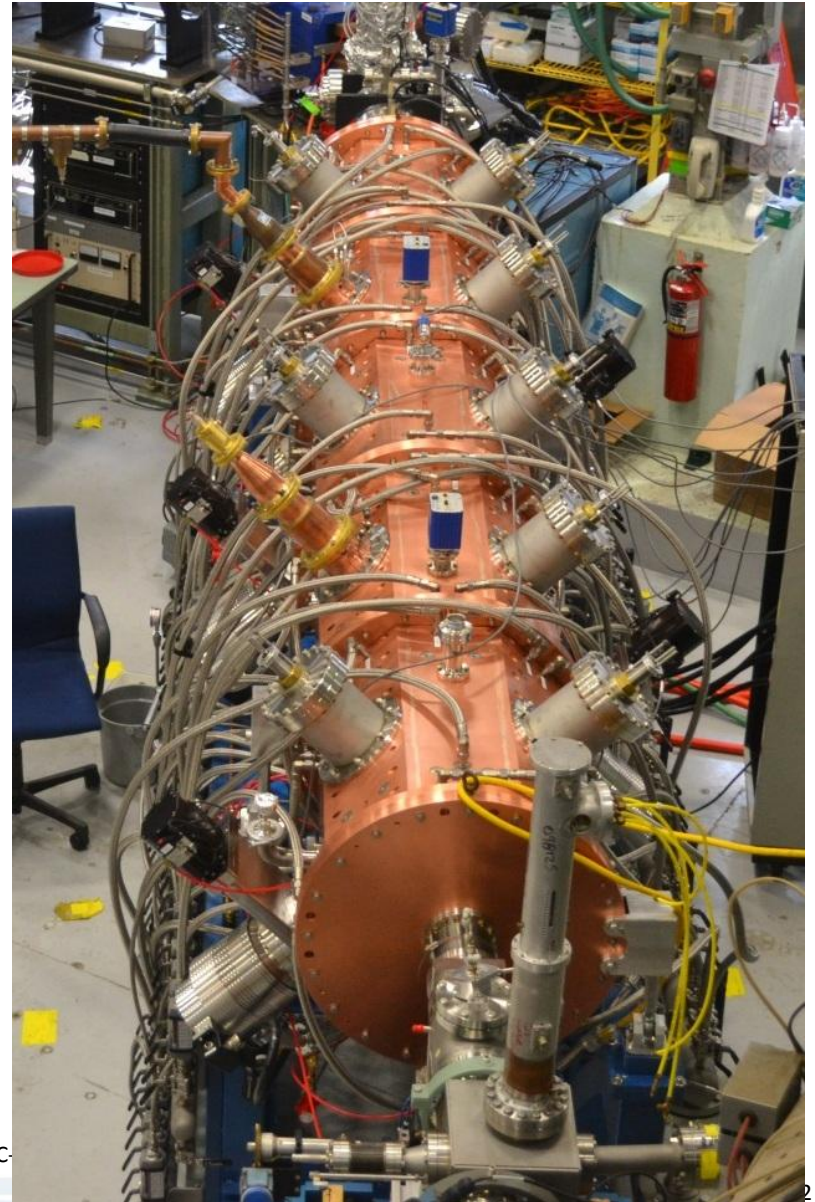
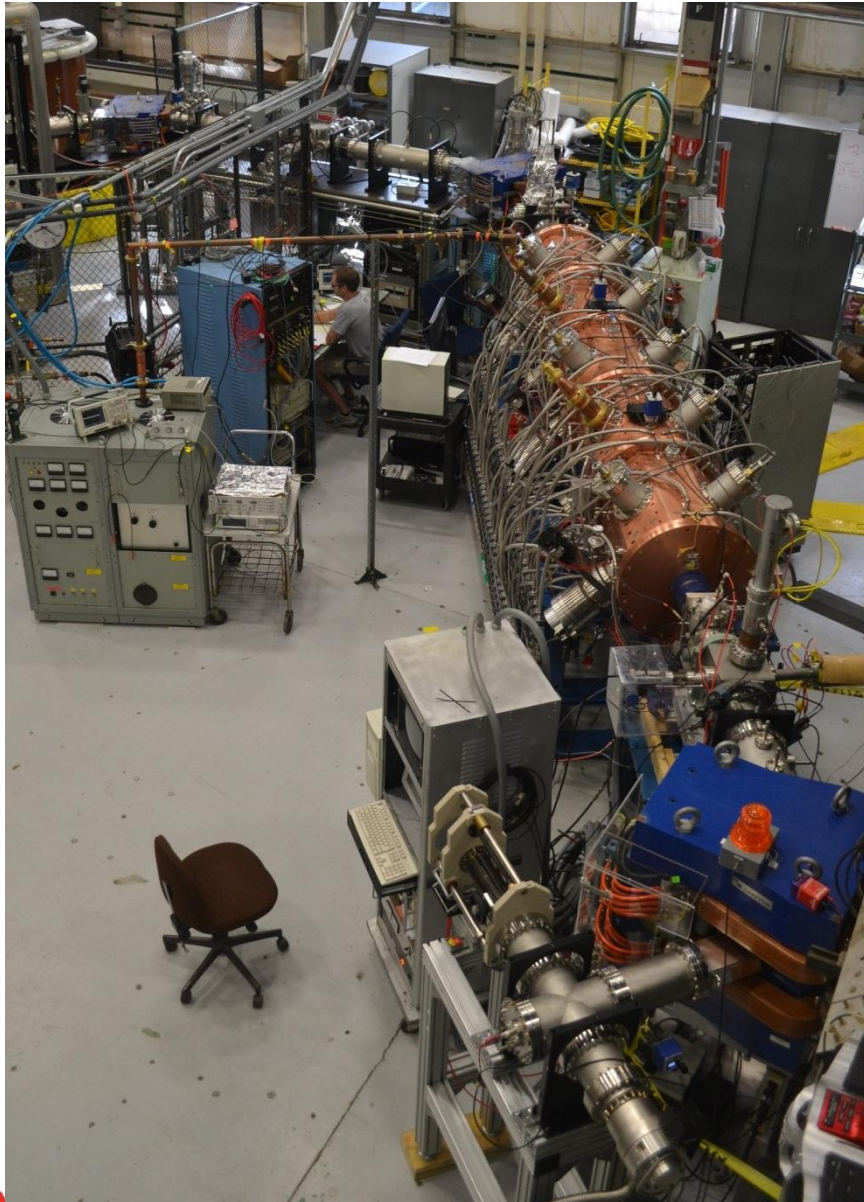
Speaker: P.N. Ostroumov

A. Barcikowski, Z. Conway, S. Gerbick, M. Kedzie, M.P. Kelly,
S. Kutsaev, J. Morgan, R. Murphy, B. Mustapha, D. Paskvan,
T. Reid, D. Schrage, S. Sharamentov, K. Shepard, G. Zinkann

September 11, 2012

New ANL 60.625 MHz CW RFQ

TUPLB08



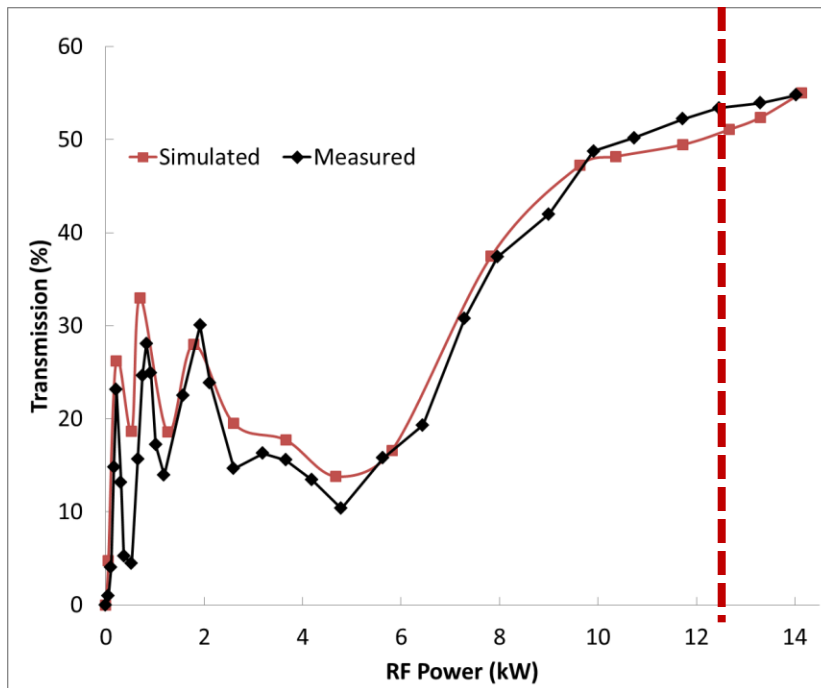
LINAC



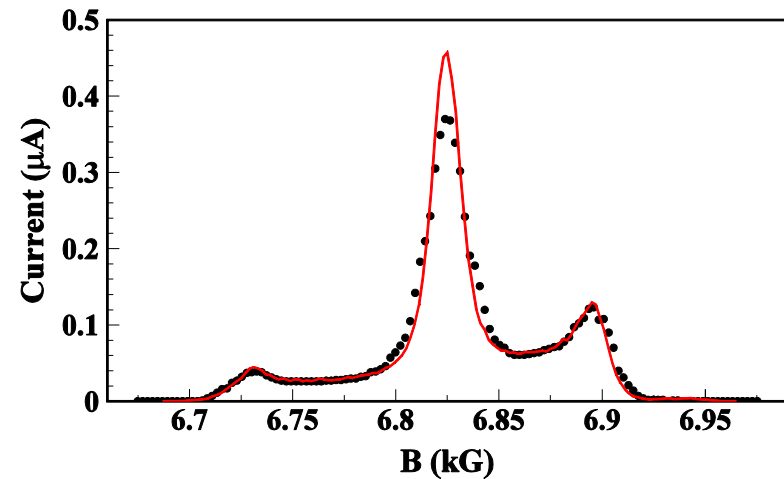
Oxygen Beam Measurements

- RFQ is designed to be used with an external 4-harmonic buncher
- Off-line testing was done without the buncher

Design power for $^{16}\text{O}^{5+}$

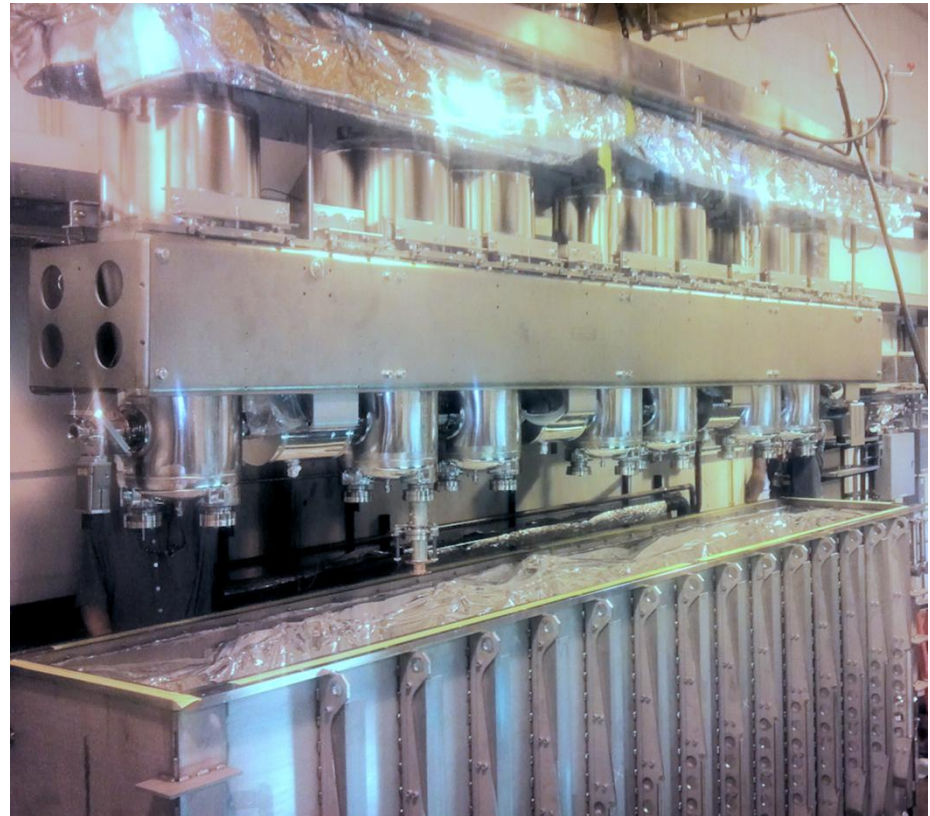


Beam energy spectrum
Magnet scan, slits + Faraday cup
Measured (dots)
Simulated (red curve)



First Double-Conical SC $\lambda/4$ -Resonator

TUPLB08

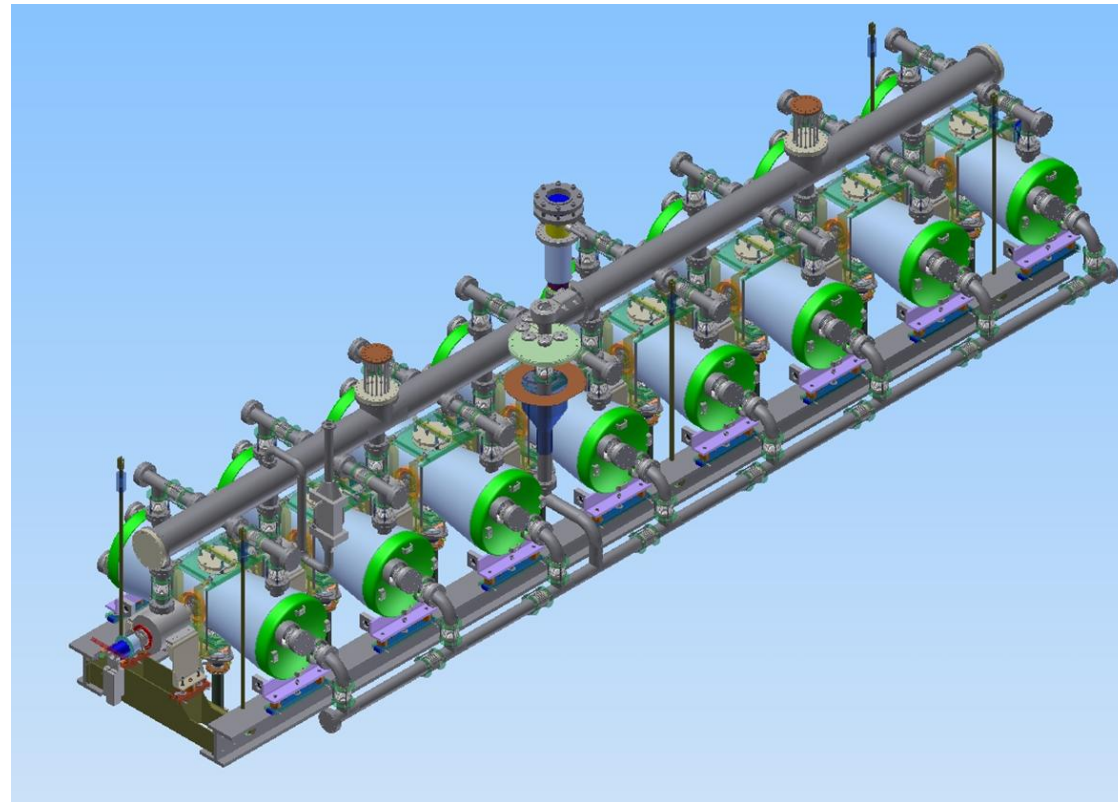
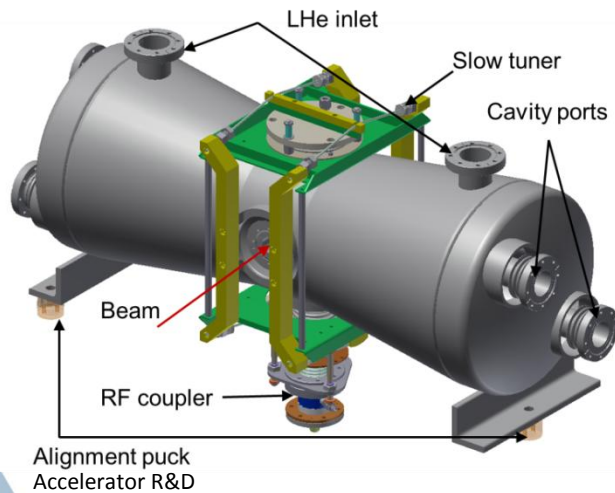
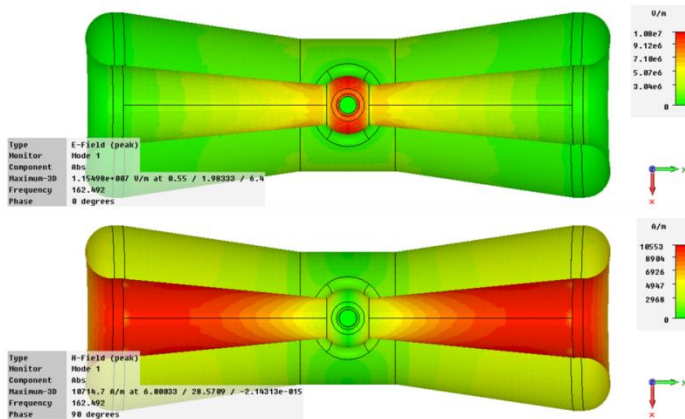


	Design V_{ACC} , MV	V_{ACC} , MV	E_{PEAK} , MV/m	Limit
QWR0	2.5	4.4	70	Quench
QWR2	2.5	6.0	96	Quench
QWR6	2.5	7.0	110	Quench
QWR7	2.5	7.6	120	X-rays

New 162.5 MHz and 176 MHz $\lambda/2$ -Resonators TUPLB08

- Application: FNAL Project X and SARAF Phase II
- Highly optimized double conical structure

Project X HWR Cryomodule



LINAC-12

- 5 mA, 40 MeV, 200 kW CW Proton and Deuteron LINAC
- New 4-vane RFQ
- 176 MHz, two type of HWRs
 - $\beta_{OPT}=0.089$ and $\beta_{OPT}=0.16$
- 15-kW RF coupler
- One cryomodule of low- β with 7 HWRs
- Three cryomodules high- β with 7 HWRs each

