

Eighth CW and High Average Power RF Workshop



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Powering CEBAF's Extraction Cavities At 12 GeV

Tuesday, 13 May 2014 11:00 (30 minutes)

CEBAF (Continuous Electron Beam Accelerator Facility) at Jefferson Lab was initially designed to deliver up to a 4 GeV electron beam simultaneously to three experimental halls. The maximum deliverable energy was raised to 6 GeV and CEBAF ran there until May of 2012 after which CEBAF entered an extensive, upgrade shutdown. After the upgrade, scientists plan to use CEBAF to deliver 11 GeV beam to the three original experimental halls and 12 GeV to new hall –Hall D.

Delivering beams to multiple halls at the new energy requires increased RF power to drive the separation cavities and adding a 750 MHz beam repetition rate to deliver beam to all halls simultaneously. Doubling the beam energy means doubling field strength in the cavities by quadrupling delivered power. 750 MHz beam repetition rate requires new 750 MHz capable cavities and a frequency change to one of the existing IOT amplifiers powering these cavities, and new 499 MHz SSAs to power four downstream cavities. Topics covered will include: verifying the Cavity's power capabilities, modifications to the 750 MHz system and new cavities, and the decision process in selecting an amplifier type to power four downstream cavities.

Primary author: WISSMANN, Mark (J)

Co-authors: Mr HOVATER, Curt (Jefferson Lab); Mr CHENG, Gary (Jefferson Labs); WANG, Haipeng Wang (Thomas Jefferson Lab); NELSON, Richard (Jefferson Lab)

Presenter: WISSMANN, Mark (J)

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