

Abstract Submitted  
for the DNP15 Meeting of  
The American Physical Society

**Bench Tuning of the 748.5 MHz Normal Conducting Separator Cavities for 4-Hall Beam Delivery** ANDREW JACOBS, Benedictine College — The 748.5 MHz cavities (or the 750 MHz cavities for short) were installed at CEBAF as part of the 12 GeV upgrade. The cavity is composed of two different cells. In each cell there are 4 copper rods, a tuning paddle, and a field probe. In one cell, a coupler antenna is inserted in the form of a copper loop. These components then work together to create an RF field that kicks electron bunches. The goal of these separator cavities was to split the electron beam so that simultaneous 4-hall beam delivery was possible. For bench tuning of the cavities, three parameters must be achieved: target operational frequency, critical coupling, and field flatness between each cell. The initial problem was that when the cavities were installed, it wasn't possible to optimize the three parameters by only controlling the cooling water temperature during the commissioning. Thus, the four 750 MHz cavities were uninstalled and underwent bench tuning. This was done through bead-pull testing, computer simulations, and off-line high power testing. The tuning procedure developed allows for all three parameters to be met. Therefore the cavities will be able to be reinstalled in the beam-line and enable 4-hall beam delivery.

Andrew Jacobs  
Benedictine College

Date submitted: 28 Jul 2015

Electronic form version 1.4