

Abstract Submitted  
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**HCAL-J: A Segmented Hadron Calorimeter with High Time Resolution**<sup>1</sup> SCOTT BARCUS, Jefferson Lab, SUPER BIGBITE COLLABORATION COLLABORATION — The design and cosmic ray commissioning results for a new segmented hadron calorimeter (HCAL-J), constructed to measure the energy of several GeV protons and neutrons, will be presented. This calorimeter will initially be used in the upcoming Super-BigBite Spectrometer (SBS) experiments measuring the nucleon form factors at Jefferson Lab, beginning with the neutron magnetic form factor,  $G_M^n$ . HCAL-J is composed of 288 individual calorimeter modules measuring  $15\text{cm} \times 15\text{cm} \times 1\text{m}$ . These modules consist of 40 layers of iron, which cause the hadrons to shower, alternating with 40 layers of scintillator, which sample the energy. HCAL-J was designed to have a time resolution of 0.5 ns and has demonstrated sub-nanosecond time resolutions approaching this goal. Investigations into implementing HCAL-J's trigger using neural networks loaded onto FPGAs will also be discussed.

<sup>1</sup>DOE

Scott Barcus  
Jefferson Lab

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