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To The Graduate Admissions Committee

Dear Members of the Graduate Admission Committee:

I am writing this letter in support of Brendt Christensen's application for admission to your graduate program. Brendt has an excellent record academic and research achievement and a keen interest in the subject of physics research. I believe that he will make an excellent graduate student and urge you to admit him to your program.

I have worked closely with Brendt over the last year. Brendt asked to work with me after taking my introductory course in particle physics. I was very happy to take Brendt on as a student considering that he was one of the best students in the class showing a superior grasp of the material. Brendt has worked with me performing research on the Compact Muon Solenoid experiment at the Large Hadron Collider accelerator. He has primarily worked on an analysis project that I describe in detail below.

Brendt is performing his undergraduate thesis research on physics measurements involving two W boson final states. He is analyzing cases where the two W bosons have opposite charge and where they both have positive charge. The latter is an exotic state in the particle physics that can be produced a proton-proton collider like the LHC. Current theory predicting the probability of producing these states has a critical weakness in that the calculations show a probability greater than unity at high energies. A process that could resolve this issue would be scattering via a boson such as the Higgs boson, which would contribute negatively to the process due to interference effects. The recently discovered 125 GeV boson could play this role and this type of process is very sensitive to determining the exact nature of the newly discovered particle and demonstrating whether this boson is the Higgs boson predicted by the standard model or a non standard model analog.

While supervising Brendt's analysis research I have noted that he quickly learns and understands all the tools of High Energy Physics research. In addition, Brendt is one of three undergraduate researches that I am working with this semester and I have noted that Brendt has taken a leading role among the three integrating their research efforts into an effective team effort. This type of leadership quality is extremely valuable in experimental research where research is typically done by a team of people who need to work together effectively. Due to Brendt's skills I expect this project to result in a publishable piece of research.

In summary I think Brendt Christensen is an excellent student with a record of accomplishment in both academics and research. I expect that he will excel in graduate school. Therefore, I again urge you to admit him to your program.

Sincerely,

Matthew F. Herndon
Professor Physics, University of Wisconsin Madison\

