

Sigma Pi Sigma Society (SPS)  
University of Southern Mississippi (USM)  
Nobel Laureate Eric A. Cornell

“SUPERMAN AND THE SUPERFLUID”

Physics, for many students throughout academia, is a seven-letter word that will forever be synonymous with turmoil, heartache, and pain. Many believe this discipline to be most difficult subject matter a college student can undertake. It follows with no surprise that introductory physics courses are some of the most repeated courses in the college curriculum nation-wide. Still, as the famous orator and statesman Fredrick Douglass so eloquently stated, “If there is no struggle, there is no progress.” Nobel laureate Eric A. Cornell is the embodiment of this statement, for he was once an undergraduate student struggling with physics curriculum. For this superman, his kryptonite came in the form of thermodynamics, and as result he contemplated changing majors. However, through resilience and focus, today Dr. Cornell is a Nobel Prize awarded physicist who ironically conducted his Nobel research in the area that plagued him the most, thermodynamics.

As the talk commenced, professors and students alike gathered from across the campus and the various disciplines to witness Dr. Cornell speak and inadvertently subjected their brain to an intellectual workout of complex contemplation. Dr. Alina Gearba, Zone 10 Councilor and Associate Professor at USM, served as moderator for both presentations and the primary host for Dr. Cornell. Though the room was filled to capacity, students and faculty from neighboring institutions such as Jackson State University (Jackson, MS), University of South Alabama (Mobile, AL), and Morehouse College (Atlanta, GA) traveled several hours to be in attendance for the talks and to participate in intellectual discussions with Dr. Cornell, Dr. Gary White (Executive Director of SPS National office), and the USM physics faculty.

The focus in the room was mind-blowing as all were intensely hanging on every word Dr. Cornell had to say regarding experimentally obtaining a Bose-Einstein condensate, and at the conclusion of the presentation, the questions quickly flowed out from all areas of the room. Comments and praise on the style and flow of Dr. Cornell’s presentation were also given. One student from Jackson State stated, “The slides of old overhead transparencies which describe the properties of Bose-Einstein condensates were both comical and informative.” Another student from Morehouse College commented, “Wow! After witnessing Dr. Cornell presentation, I have a better understanding of what the theory is trying to convey.” It was easy to see that the crowd was thoroughly impressed and even more informed at the finish of Dr. Cornell’s first presentation.

However, the amazement neither stopped there nor was limited to Dr. Cornell. Being an avid runner since high school, Dr. Cornell along with 3 others (Dr. Willie Rockward of Morehouse, and 2 USM graduate students) enjoyed a four mile run the following morning. Later that day at a student luncheon Bakari Hassan from Morehouse College asked Dr. Cornell how he kept the superfluid he used in his experiment contained to which Dr. Cornell replied, “I have no idea!, All these years and you’re the first person to ask me that!” This question lead to a lively discussion

between Dr. Cornell and students from Jackson State, Morehouse College and the University of Southern Mississippi, which left Dr. Cornell thoroughly impressed with the students and their knowledge of physics.

Before his final presentation, students got a very rare chance to interview Dr. Cornell on a one-on-one basis. He discussed why he chose a career in physics and spoke of the people who influenced his decision. “It was the different instructors in physics I’ve had since high school...” says Cornell, “...that made physics challenging but fun and that drove me towards it as a career that I enjoy.” Students were both encouraged and inspired by the insight of Dr. Cornell which was very timely before the most important part of every students academic semester, finals season. Moreover, many questions were asked, but there was one particular question that resonated with all the students. This question was based on graduate school and student struggles with physics. Without hesitation, Dr. Cornell shared maybe the most important information he could impart on a student. “In undergrad, I struggled through thermodynamics not understanding anything about topics such as entropy, but the American education system is repetitive, so undergrad shows you THAT something works while graduate school explains HOW and WHY something works.” This otherwise general comment spoke volumes to many students in the room facing the very same issues in their current academic career; not comprehending the science that they are learning and many times just accepting things they do not completely understand.

All-in-all, Dr. Cornell did an amazing job of keeping his audiences engaged in the subject matter, which resulted in great discussion and interaction amongst all that were in attendance. Although the atmosphere of the talks was very engaging, Dr. Gearba and the USM SPS chapter made sure that all visitors received a great sense of “Southern Hospitality” while visiting Hattiesburg, MS. In closing, if you are ever presented with the opportunity to attend at talk presented by Dr. Cornell, we highly recommend that you take full advantage of the opportunity – we promise that you will not regret it.



Dr. Eric Cornell (Front row, seated 5<sup>th</sup> from left) alongside colleagues and their students from Jackson State, USM, and Morehouse.



Dr. Eric Cornell (Center) alongside Dr. Alina Gearba (Right) and Dr. Willie Rockward (Left).



Dr. Eric Cornell (Center) with Dr. Rockward (Left-center) and students from Morehouse College.



Faculty & students enjoying lunch while engaging in intellectual conversation with one another.

Humbly submitted by:      Ronald Stubblefield                      and  
Junior, Physics & Mathematics  
Morehouse College

De'Andre Cherry  
Senior, Physics  
Morehouse College