

“What? You like physics?” is a question people have asked since 1994 when my love for physics began as a student at the Mississippi School for Mathematics and Science (a public, residential high school for academically, gifted students). While many of my classmates were complaining about being required to take physics and its difficulty, I was being introduced to physics for the first time. I read my physics chapters diligently, studied and began to realize that I enjoyed learning physics concepts and solving problems. Although my sprint-styled learning pace steadied as I concentrated to master physics, I refused to allow the extra effort to turn me away. In retrospect, I realize this challenge mixed with passion for physics has not only kept me focused for ten years, but has also advanced my scientific infatuation for physics into a love for science and engineering. Since 1994 the abundance of opportunities for excellence in both physics and my personal life has motivated me to optimize my time to maximize fulfillment in life. I invite you to consider one case where I have coalesced physics with my personal life that has enhanced my desire to accept the challenge of obtaining a PhD in physics.

I believe that a PhD in physics will ultimately allow me to serve and encourage others, which I have identified as a characteristic of my personality. As a child at home, I vividly remember thinking during times of family conflict that I had to keep conversation going in my family. Somehow I knew that if we talked we could encourage each other and work out problems. Later, I encouraged people outside of my family by becoming a cheerleader for my local elementary, middle and high schools. Cheerleading like all other sports is based on fundamental techniques. In middle school, I learned the basic technique of synchronizing rigid motions of each cheerleader for the squad to meet standards of accuracy and precision. My senior year in high school I began to learn two-person partner stunting. In partner stunting, rigid motions and the technique in the lift and catch sequence are crucial for safety. As I focused on learning partner stunts and physics, I began to relate cheerleading and physics by considering the lift and catch sequence as an example of free fall motion. The base (bottom partner) and flyer (top partner), considered rigid bodies by maintaining rigid motions, coordinate the launch of the flyer into free fall motion, allowing placement of the flyer in a mid-air position or stunt. In order to dismount, the base and flyer synchronize another free fall motion sequence where the flyer is caught in a technique called cradling, an example of momentum conservation. For the first time, I related concepts in an area of fun and accomplishment in my life to science. I believe this connection provided excitement that gave me a desire to learn as much as possible about physics.

I grew so serious about cheerleading and physics that I went to a new level in cheerleading every time I went to a new level in science. I actually started the squad at the Mississippi School for Mathematics and Science and lead the Spelman College squad two out of three years. But I was never the typical “Oh my gosh! Oops! Go Team!” cheerleader. I not only focused on the physics of cheerleading but also encouraged my sports teams and squad to focus and do their best at all times. It was only after I stopped cheering in college (to focus and do my best as an engineering student at GA Tech) that I realized the same encouraging spirit I used in cheerleading could be utilized in science. As a coach for my church’s cheerleading squad, I taught my young squad the principles of purpose that I lived by as a physics and engineering student. I taught that a cheerleading’s purpose was encouraging their team to do their best. My squad believed me and became cheerleaders with a purpose. It was at this point that I began making the connection between my encouraging spirit, my seven-year cheerleading career and my purpose to become a lifelong proponent of students in science and engineering. Getting my PhD advanced from being based solely on my love for the science to what I knew I needed to do to encourage others to purposefully succeed in science and engineering. As a black woman, I know the fears that discourage women and minorities from studying science and engineering. To counteract these fears, women and minorities often need opportunities to relate science to their personal lives, i.e. my physics and cheerleading experience. These experiences can fuel a student’s learning by giving the motivation needed to pursue advanced studies in science and engineering.

Upon obtaining my doctorate, I envision myself as a cheerleader for students to succeed in physics and engineering. However, just as I refused the limited label of a “typical cheerleader,” I will not limit my students or myself in physics. The skills physics teaches can be used in many areas, such as business, education, public policy, homeland security, and international affairs. When an individual has an interest in these areas and physics, I will encourage incorporation of those interests with physics. As a true encourager and extrovert, it has been challenging for me to simultaneously grow as a scientist and strengthen my extroverted characteristics. However, I know the skills I developed maintaining both the technical and gregarious sides of my personality will allow me to lead in physics, engineering and my community while influencing aspiring students to accept the challenge of physics.