

LHCP Conference Welcome

June 3, 2024

Hazel Sive

Good morning! I'm Hazel Sive, Dean of the College of Science here at Northeastern University and I'm thrilled to open the LHCP Conference 2024.

I'm honored to welcome you to Northeastern University and delighted we are hosting this important meeting. Warm congratulations to co-chairs Professor Emanuela Barberis and Professor Toyoko Orimoto for their leadership and to other members of the organizing committee for bringing together this meeting. Congratulations to everyone involved!

In this short welcome, I want to do two things. First, I'll tell you a little about Northeastern University and the College of Science. And second, I'll try to relate your field of particle physics to a quite different area, and emphasize some of the deep and wonderful commonalities of science research.

First, Northeastern is an innovative university, that interestingly, is also a global university, comprising fourteen different campuses across the US and the world, with our nexus here in Boston.

Our students are excellent: this year's undergraduate admission rate is 5% and one attraction is our unique, empowering experiential education – where students can explore future career paths.

Our signature program is called 'coop' and every undergraduate spends two or three six-month periods of paid work in industry, government, corporations or organizations, including at CERN. Coop develops a can-do, responsible mind-set in each student, a network of contacts and options for future careers. It's a terrific heritage from Northeastern's beginnings as a blue-collar school, retained and refined as we have developed into a top rated, R1 research university.

Our College of Science has a unique vision - to build what we call the Good Power of Science, in educating the next generation of science professionals and in solving the greatest challenges of our time through fundamental and applied research. College of Science research spans every scale, from your tiny particles to molecules, cells, organs, the mind, large ecosystems and the cosmos.

The focus across Northeastern including in the College, is on collaborative, cross-disciplinary, high-impact research approaches.

Our outstanding Physics department is no exception: in the four years since I've been Dean of Science, we've hired more than 50 tenure track faculty members in the College, 14 in Physics. About half of our new Physics faculty have joint appointments in other departments or colleges, emphasizing our landscape of cross-disciplinary, convergent research. Our new Quantum Materials and Sensors Institute includes some of these cross-disciplinary faculty, based at our Burlington campus.

To read out the Good Power of Science, I've emphasized that it is essential science researchers span all demographics of society. We are committed to being a Diverse College where Everyone Belongs. I'm thrilled that since I've been Dean, we have significantly diversified our new science faculty, including doubling the percentage of brilliant Physics faculty who are women.

Now let me move to the second point: to relate your field of particle physics to a quite different area. Really the reason for this, is because I wanted to comment in a personal way on the importance of your field.

But I, myself am not a high energy physicist or a physicist of any kind, although like all science, my field is based on principles of physics.

My field is developmental biology, and we ask how a single unit, a single cell becomes a person made of ten trillion cells. Developmental biologists seek to identify the fundamental building blocks and processes that underlie the extraordinary construction by which you were made.

We seek to understand processes of building a person at several scales, from small molecular levels to larger cellular levels, asking how the five hundred different kinds of cells in your body arise. And at a larger scale, we seek to understand the processes that bring together millions of cells into an organ with a specific function, like your brain that thinks or your kidney that filters your blood.

The construction of a person is the most complex building project on the planet. But each person comprises just \$1500 of raw materials, and assembly is quick, reproducible, and mostly perfect.

From research into this amazing Construction Industry of Life, has come knowledge that defines every new medicine, every new cancer therapy, every new vaccine. This is my field and the scales at which I work.

In thinking about parallels to your field of particle physics, you too are searching for fundamental building blocks, fundamental processes, and fundamental rules. I think you seek to understand Construction of the Universe, an awesome mission. Your scale is way smaller than those of my field, but in both particle physics and developmental biology, it seems to me that scientists have a deep commonality in searching for fundamental components and processes.

We further share across our fields of science the drive for discovery, for figuring out how things work, for breaking through the frontiers of knowledge. We share the need for innovative methodology and techniques, your Large Hadron Collider and your suite of important detectors. From this drive, and from thoughtful experiments we pull out data that may whisper to us, if we listen carefully, some insight towards new understanding.

I think these further commonalities comprise the profound truth, wonder and power of fundamental scientific research.

In concluding, I was thrilled to note the LHCP event on June 6 at the Boston Public Library, for members of the public with no training in physics. In the College of Science, a key goal is to Open Science for Everyone, including our Bridge to Science program that is making Physics less scary for high school students.

I'm a fan of going further, to science fiction that can bring some appreciation of a field to anyone. And inadvertently, but presciently, I happen to be watching the 3 Body Problem on Netflix right now. It's a fascinating homage to high energy physics in the multiverse!

In conclusion, I'm delighted to welcome you to Northeastern University and the College of Science. As you share your crucial, groundbreaking research, and as you explore Boston, I hope your week is productive and enjoyable.

Welcome and Congratulations!