

In defense of a broad definition of high energy physics

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May 4, 2023

- An important part of prioritization is articulating what we are trying to do.
- The traditional goal of high-energy physics, most likely on display in the first twenty minutes of a randomly-selected high-energy physics colloquium, is that we are looking to discover new particles beyond the standard model.
- This is certainly an important part of what we do, but if we use this as our main definition of success then I am sorry to say that we do not seem to be doing very well at it.
- Fortunately I do not think this definition really does justice to the field: we do have clear successes, but I feel that we (and in particular this p5 process) need to better articulate what they are and why they matter.

The goal that I think ties us all together is really the following:

To better understand the fundamental laws of nature

- What are the fundamental laws of nature?
- What kinds of phenomena do they lead to?
- How confident are we in them?

In a situation such as our current one, where we do not have a clear indication of where to go next, I think it is essential both to think hard about the foundations of the field and to support a broad range of inquiry on many topics under this general umbrella.

Don't put all our eggs in one basket!

To be more concrete:

- Gravity is just as fundamental as the other forces, and so are inflation and dark matter. These are not things we do on the side, they are a core part of high energy physics.
- There are also many areas of overlap with quantum information science and condensed matter physics, with important ideas flowing in both directions, and these connections should be encouraged (while maintaining our focus on the fundamental laws).
- High-energy theory in particular (I'm a theorist) should have a very broad scope: everything from detailed collider calculations and cosmological perturbation theory to formal QFT and quantum gravity should be explored. These topics are so interconnected that any attempt to narrow the scope would harm all of them.
- Keep funding smaller experiments in addition to the big ones.
- For godsake fund some R&D for a muon collider!