



Question:

How can we make a case for LHC and collider physics as we enter an experiment-led era with no further discoveries (yet) since the Higgs Boson?

***Question:* How can we make a case for LHC and collider physics as we enter an experiment-led era with no further discoveries (yet) since the Higgs Boson?**

Four groups that we need to make the case to:

- **Funding Agencies**
- **General Public**
- **Colleagues in HEP**
- **Colleagues out of HEP**

Effective Arguments for Funding Agencies

- ▶ **We want the US to maintain its leadership position in science!**
 - Given current trends, within 10 years China will spend a larger percentage of their GDP on fundamental science research
- ▶ **Positive effects of STEM education on the economy**
- ▶ **Off shoot Technologies**
 - Medical physics, crystal scintillators, Big Data analysis, etc.
- ▶ **Using Popular science for publicity and excitement**
 - Social Media presence is useful
- ▶ **Can we engage more “Influencers”?**
- ▶ **Could we fund our own lobbyist?**
 - ▶ Would require raising 200k per year
 - ▶ **How can we do this?** (Question/Discussion within our community!)
 - Idea:** Reach out to tech giants for funding here: We are maintaining their workforce

Should USLUA organize training events for the Washington visits?

How do we advertise our success?

Show that we are pushing both an evolution of Knowledge and an evolution of Approach

- ▶ **Evolution of Knowledge** - “Small” steps forward are worth advertising!
 - ▶ Higgs coupling to Fermions - The Higgs interacts with all matter in the universe
 - ▶ Higgs Field changes how we understand the universe as a whole
 - ▶ A Discovery would revolutionize how we view the universe
- ▶ **Evolution of Approach** - Fundamental science research as a mechanism for training the STEM workforce
 - ▶ Physics Research **makes use of** and **evolves** the latest technologies:
 - ▶ In the 70’s with the [internet](#), In the 2010’s with [Big Data analysis techniques](#), [ML](#), [high frequency trading](#), etc.

How do we measure successful engagements?

- ▶ Through survey results of the D.C. trip: enthusiasm in a number of offices

We should **look for opportunities** for “easy” publicity!

- ▶ **Scientific result such as:** the Higgs couplings to fermions, Discoveries of rare particles, Precision measurements
- ▶ **Ask** (require?) **every analysis to write a blurb on why their result is important!**
- ▶ These can be **advertised by CERN/Experiments** and at **universities**

Outreach events: “**Ask a Scientist**”, **Street Fairs** and **Festivals**

- ▶ Engage the public in events that are not necessarily purely science focused
- ▶ University groups could host once yearly events where they engage the public (AMAs, open houses, etc.)

Engage more “Influencers”

- ▶ **Successful strategy for the NIH** (Julia Roberts lobbied on their behalf)
- ▶ **How to do this?**
 - ▶ Make an exciting 1 page letter: ***Ask if they are interested!***
 - ▶ **Potential people to contact:** Tech giants and organizations, Elon Musk, Jeff Bezos, Astronauts, Taylor Swift, Big Bang cast, etc.

Engagement: Hold discussion groups within the experiments

- ▶ **Regularly discuss the future of our field**, where should we go next? How should we get there?
- ▶ **How do we fund future projects?**
- ▶ **Educate our own community** (at all levels) **on the process of DOE Funding**
 - Discuss Future Collider/Experiment proposals and plan forward for the future

Reminder: ***“A once in a century discovery is once in a century”***

- Maintain a plan, push step by step to improve the understanding of the universe

Convince colleagues in HEP that we need to promote our field to raise money

- ▶ **How do we publicize that government and public engagement is needed?**
 - Educating senior leadership
 - Get provost to visit or campus people to visit
 - Push to liberate funding for the next trip
- **Remind everyone that funding issues affect our entire field:**
 - How much money is needed? To send 25 people to Washington we need ~\$25k
- ▶ Ask our community to **donate funds** or to **help publicize funding opportunities**
 - Provide material to the HEP community
 - In lieu of money can you send a student or post-doc?

Maintain a grand vision while taking practical steps

- ▶ Define **short** and **longterm** goals
- ▶ **Emphasize incremental discoveries**
 - ▶ Discovery of (for example) exo-planets receives a large amount of publicity, what about the discovery of rare SM particles?
 - ▶ Emphasize good track record of completing projects on time
- ▶ **Emphasize scientific arguments**
 - ▶ Potential for new physics discoveries: Dark Matter, LLPs, SUSY
 - ▶ ***The Higgs is unlike any other particle in existence!***

How to make a case for collider physics



For the physics community:

We have discovered a new particle that is unlike any other in existence

- We need to study it!
- Precise measurements of the SM are important

Regular discussions within collaborations (and without) will keep our community engaged

For the public:

Collider physics captures the imaginations of people of all ages,

If we can engage them: Advertise incremental results, engage the public

For Funding Agencies:

The value of scientific research is its effect on society:

- Create a **STEM educated workforce** and inspire the next generation to pursue STEM
- **World leadership in scientific research**
- ***Technology off shoots***