Remarks by
Hon. Chris Fall, Director
DOE Office of Science
Americas Workshop on Linear Collider 2020, SLAC Virtual Meeting
Thursday, October 22, 2020

- Good afternoon everyone and thank you for the invitation to be with you today – at least virtually.

- I'd like to share with you a few words about the program of the Department of Energy Office of Science, in particular on the topic of advanced accelerator technologies,

- and provide some thoughts regarding proposed future colliders.

- Accelerators are at the core of what we do at the Department of Energy Office of Science.

- Accelerators and accelerator technology have been an integral and enabling part of the Office of Science portfolio since well before there was an Office of Science or a Department of Energy and before we had established National Laboratories.

- I was just last week on the hill at Berkeley Lab where much of that seminal work was done here in the US.

- After their debut there in the 1930s, the succession of larger and more powerful machines for particle-based scientific research had a fundamental effect on how our country and the world around us does science.

- In the United States, big machines for science and the large and international collaborative research teams that work on them are a cornerstone of the Department of Energy's science mission, and these efforts lead directly to one of our super powers that we call 'science at scale'.

- Big machines for science conceived of, built, and operated by huge scientific teams.

- It's a remarkable skill

- This 'science at scale' that we've learned over the years by working with accelerators has now translated over to high performance computing, to artificial intelligence and machine learning, to genomics, to material science – fusion even - and to developing cutting-edge detector instrumentation for large experimental collaborations.

- And of course accelerators have not just enabled and changed science, but they've also changed the world.

- Today, particle beams from some 30,000 accelerators are at work across the world, yes in discovery science, but also in areas ranging from diagnosing and treating diseases to developing powerful industrial processes.

- They have also led to a host of practical applications and have introduced new and emerging technologies that benefit society and our daily lives.

- How important are accelerators to the mission of DOE?

- DOE's Office of Science currently operates 28 world-class User Facilities that serve nearly 35,000 users.

- These facilities allow advancing scientific and technical knowledge by users through information sharing, forming collaborations, and producing scientific results.

- More than half of the users come to the facilities to conduct research that depends on large particle accelerators.

- As our report, *Accelerators for America's Future,* points out, the accelerators of tomorrow promise still greater opportunities.

- Next-generation particle beams promise more efficient, cost-effective, and even greener alternatives to current industrial processes.

- And they promise to improve health and well-being, for example through targeted cancer treatment with minimal side effects.

- And of course they allow us to continue our search for an understanding of how our universe works at the most fundamental levels.

- But if you let me channel my inner engineer for a moment – I started out as an engineer before I became a scientist -

- I am incredibly excited about the idea that we can shrink these machines down from kilometers to meters.

- And as I look across the range of issues I've had the privilege to be involved with in my time at DOE, there is probably nothing more consequential I could do than to say yes, let's do that.

- That is an obvious way to expand the scope of science and to improve the human condition.

- So for both near term development and more aspirational goals, DOE continues to invest in accelerator research and accelerator stewardship.

- We intend to continue to lead in the development of this amazing technology.

- Including compact accelerators.

- And while we will continue to be good partners with collaborators and industrial partners around the world

- As a matter of policy we will nurture and maintain a robust supply chain here in the US for these critical parts.

- We have some really exciting work going on right now at our existing user facilities.

- This includes the LCLS-II project at SLAC, where this meeting is being hosted, and upgrades to our light sources at Argonne and Berkeley Labs.

- But it also includes the major international projects: our contributions to the high-luminosity upgrades at CERN, the Proton Improvement Plan-II (PIP-II) accelerator project at Fermilab, and the Electron-Ion Collider (EIC) that is being hosted by Brookhaven National Lab.

- And of course, there exists the possibility of a future International Linear Collider (ILC) and a Future Circular Collider (FCC).

- As I have expressed before, there is strong interest in participation by the United States in the ILC program.

- Earlier this year in February, the Secretary of Energy Brouillette also expressed these same thoughts when he wrote to Japan's Cabinet Minister of State for Science and Technology Policy, Mr. Takemoto.

- We plan to continue discussions both bilaterally with MEXT and other officials in the Government of Japan, and multilaterally with the governments of other global regions to not only have a dialogue on the sharing of costs and resources, but also in understanding organizational and governance models for such a largescale research facility as the ILC.

- I believe that any next phase should not just be a technical discussion among the laboratories – yes that is important and should continue - but it is very important that the agencies and ministries that might fund this world-class machine be part of a resource conversation at a high-level.

- While your meeting this week focuses mainly on linear colliders, I'd like to also briefly discuss one other collider geometry: those that are circular.

- As I've mentioned on a number of occasions, the US is committed to remaining partners with CERN.

- We support the 2020 European Strategy and are pleased it recommended that CERN and Europe to launch technical and financial feasibility studies towards a proposed Future Circular Collider (FCC) hosted in the Swiss-French border and to advance accelerator R&D.

- The U.S. particle physics community is now engaged in its community-wide “Snowmass” study that will provide input to next year’s P5 strategy process – a process that will eventually inform our decisions about the size and scale of US contributions to future collider initiatives.

- And the United States is committed to remaining a leading player in the landscape of large international collaborations for physics.

- Great scientific discoveries come from collaborations and reciprocal exchanges that cross national borders and adhere to best traditions and shared values.

- This is an area that is of particular importance to DOE and across the United States Government — that shared scientific values and shared scientific norms will factor into our planning for collaborative partnerships.

- It's not just because accelerator science and technology are fundamentally dual use, with obvious national security dimensions.

- But it's also the right thing to do to insist that we maintain these standards that define what open, collaborative science is, and that frameworks for intellectual property with commercial implications are recognized and adhered to.

- I believe that American participation in overseas projects like the LHC and participation by global partners in U.S.-based projects like the LBNF and DUNE are outstanding current examples of international cooperation.

- We welcome more collaborations that respect established norms and that are win-win.

- I'd like to conclude my remarks by thanking you all for the dedicated work you do to push this technology and this science forward.

- People come and go in these government leadership positions like the one I occupy.

- Conception, construction, and operation of these grand machines for science occurs on a timescale of decades.

- It's leaders like Jim Siegrist and his team in my organization, those groups that give us formal advice, and those of you in communities like this one that maintain focus over the long haul and make these achievements possible.

- I've been here long enough now to appreciate the care with which the physics community approaches their planning for the future.

- And a bit about the effort that goes into each of these facilities.

- It's a profound privilege to be able to address you today in my role with the Department of Energy, to be able to participate in just this small way in the profound work that you do.

- Thank you.

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