

Why do we need a next high-energy collider?

The LHC gave the last building block of the Standard Model; a 125GeV Higgs boson.

If you just take our current base - the Standard Model - we found all particles!

Except - there's some problems with that...

Because we don't know if we really found all the particles there are

- or even if the ones we found ARE the Standard Model particles.

Not all of their predicted properties have been measured with precision.

More importantly; The Standard Model is not about particles - it's about interactions.

Some of those interactions - especially for this Higgs - have NEVER been measured!

And that is not a minor issue;

We expect this Higgs to give mass to all other elementary particles!

And slight differences in its properties could mean our universe is unstable!

That demands clarification through experiment!

- an experiment that shows us with precision how particles interact.

And we know how to do this.

For precision measurements we use electron positron collisions.

It's the intuitive way to go;

It has a clean and well-known initial state

And

The final state can be measured with high accuracy.

In other words: We can do precision physics!

This is why electron-positron colliders still hold the record on many precision measurements, like the mass of the Z boson.

And doing precision HIGGS physics gives us even more specific requirements;

Probing its fundamental behavior needs energies high enough to see two Higgs' produced at the same time.

And to get strong, clean signals we need to set the spin of the colliding particles.

These two requirements are only feasible at linear colliders.

So what we want is a high-energy linear electron-positron collider, to do precision measurements of the Higgs properties.

There are proposals for this.

But one in particular has proven beyond doubt that it can do what it promises:

And that project is the International Linear Collider.

With this machine we could study the Higgs to unprecedented detail.

And all key technologies have been demonstrated:

The E-XFEL is basically a running prototype of the ILC accelerator.

We built prototypes for all critical detector components,

tested them in numerous testbeams,

and have full detector simulations based on these prototypes.

With these simulations we demonstrated the ILC's potential.

Decades of intense preparation studies have shown: ILC can be the next chapter in particle physics!

If you believe in the ILC, now is the time to make your voice heard!