

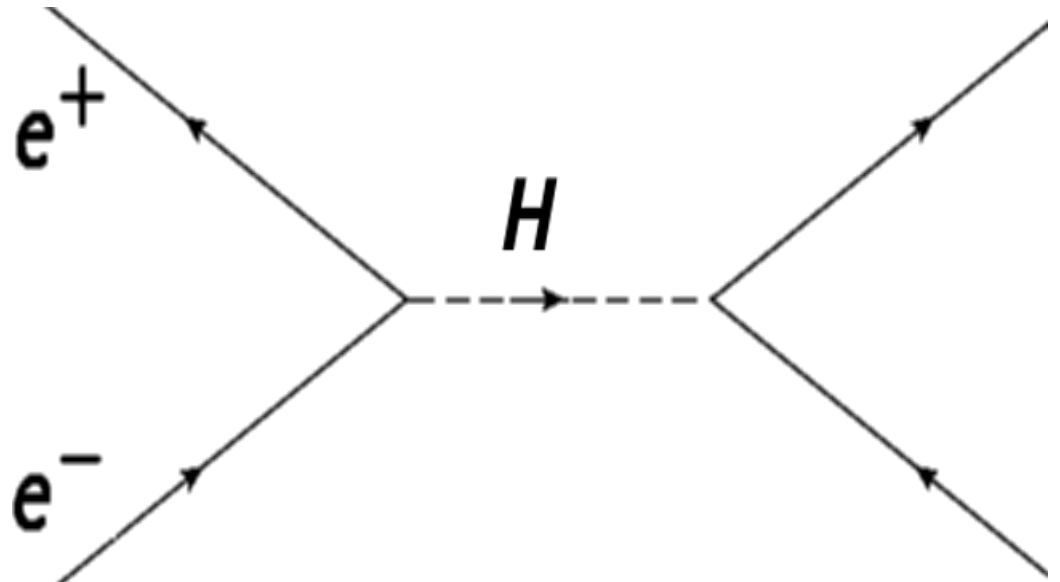


Search for Resonant s-channel Higgs Production at FCC-ee

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Last Time...

- FCC: Future Circular Colliders
- TLEP-- LEP's badass, high-luminosity successor... Let's use it as a Higgs factory!
- Measurements of $e^+e^- \rightarrow H$ processes could yield more precise values for Higgs properties, reveal data about direct Higgs coupling to electron



What Have I Been Up To?

- Questions: What kind of a signal does the Higgs leave? Can we see it easily?
- Answers: Very small (cross-section 1.643 fb), no.
- I need to find cuts to make certain decay pathways have visible Higgs signals!

Channel	Signal (uncut)	Bkg (uncut)	Signal (cuts)	Bkg (cuts)
$H \rightarrow WW \rightarrow l\nu jj$	134 ab	12.8 pb	77 ab	12 fb
$H \rightarrow WW \rightarrow l\nu l\nu$	22 ab	5.5 pb	11 ab	570 ab
$H \rightarrow ZZ \rightarrow \nu\nu jj$	10 ab	4.2 pb	6 ab	88 ab

What's Next?

- Get more channels (purely hadronic final states)
- Combine statistics – Determine what the precise mathematical significance of my complete Higgs signal is – Do I need any more channels?
- How much can we tell from this data? If we can't see a significant signal, what anomalous physics can we rule out?
- Concerns:
 - What if I can't find anything???
 - Will I finish in time?
 - What if I miss something really obvious???

Fun Photo!

