

# BILL AND NATHAN, RECORD LECTURE!!!!

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# Factoring Is Probably Not NPC

# BILL START RECORDING

# Factoring: Some History

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**I think it is unlikely that anyone aside from myself will ever know.**

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- ▶ **Conclusion**

- ▶ His arrogance: assumed the world would not change much.
- ▶ Our arrogance: knowing how much the world did change.

# Factoring Algorithms

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- ▶ We measure the run time as a function of  $\lg N$  which is the **length** of the input. We may use  $L$  for this.

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**Goal** Do much better than time  $N^{1/2}$ .

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- ▶ Number Field Sieve ( $\sim$ 1990):  $N^{1/L^{2/3}} = 2^{L^{1/3}}$ .

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- ▶ SVP algorithm (2020): Unclear!

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- 4) Factoring is in Quantum P but that won't be a problem for a while, if ever.
- 5) Number Theory is a legit example of Math done with no application in mind that ended up having real applications.