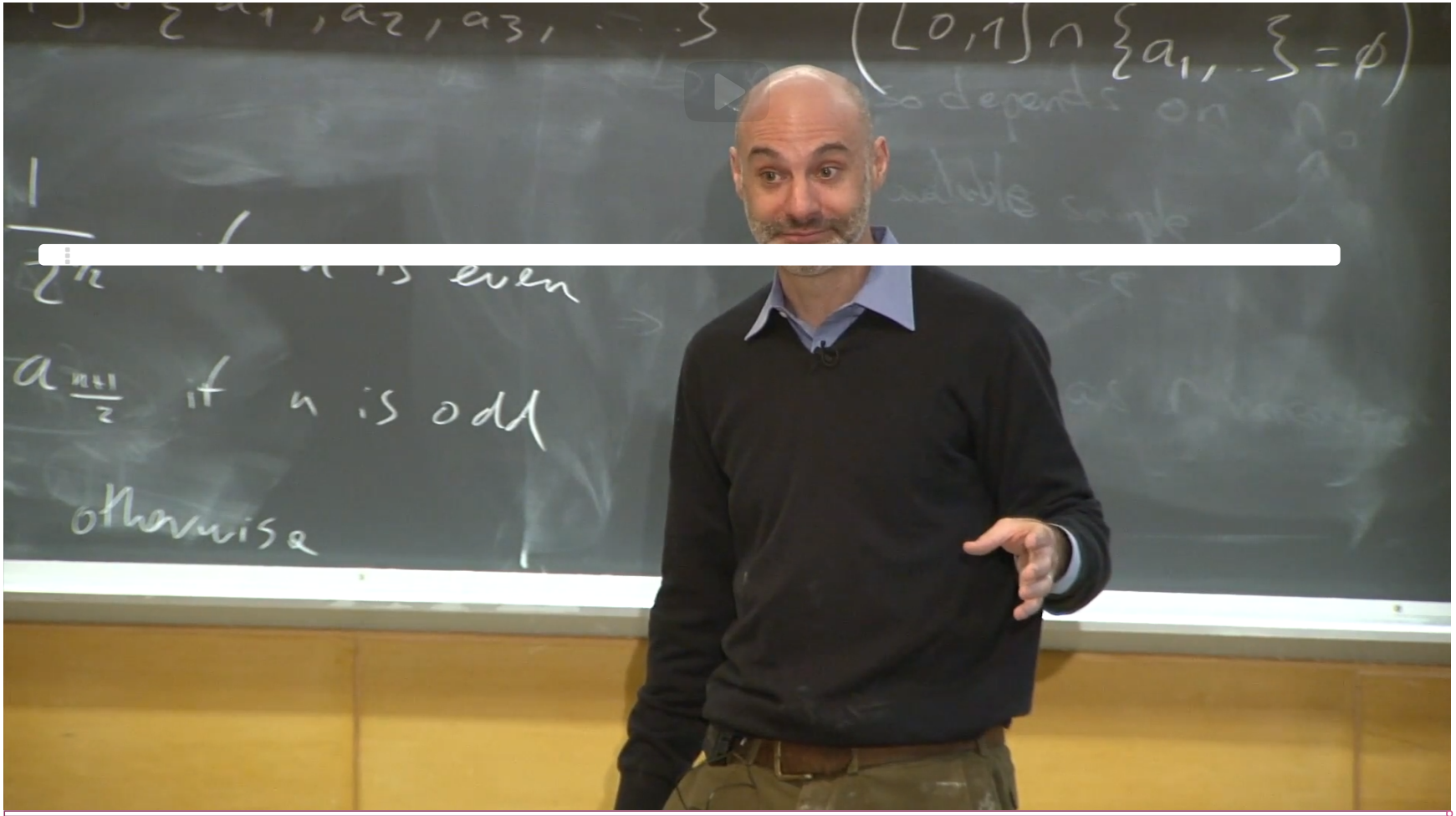
Cantor's Theorem
Video: Introduction to Cantor's Theorem



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We have succeeded in identifying two different sizes of infinity: a smaller one, which corresponds to the size of the natural numbers and the rational numbers, and a bigger one, which corresponds to the size of the real numbers.

Could there be infinities of other sizes? Yes! We have:

Cantor's Theorem
A set always has more subsets than it has members.

This result entails that there are more subsets of real numbers than there are real numbers, and more subsets of subsets of real numbers than there are subsets of real numbers, and so forth. In other words: *there are infinitely many sizes of infinity!*

Cantor's Theorem is, of course, named in honor of Georg Cantor who proved this result, along with all of the other main results in this lecture.

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Empty set?
How can the empty set have more subsets than itself?
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