

Dear First Three Minutes Class,

For Wednesday, please read Chapter VIII, Epilogue and the Afterword.

Weinberg wrote “The First Three Minutes” 1977 and added the Afterword in 1993 as a scientific update. We are here in 2021, 28 years later, and even more things have happened. Three major advances that have taken place are:

1. Inflation - the rapid expansion of universe starting at 1 billionth of a billionth of a billionth of a billionth of a second. In the following 100 thousandth of a billionth of a billionth of a billionth of a second, the universe doubled in size 86 times.

2. Dark matter - a mysterious substance that does not interact (much) strongly, weakly, or electromagnetically but does interact gravitationally. It seems to play very little role in the early universe, but sets that stage for galaxy formation 200 My in.

3. Dark Energy - almost completely invisible until about 6 billion years ago, but will drive the universe apart from now on.

I will talk about each of these three things in Meetings 9 and 10.

Meeting 9 Agenda

1. Introduction and announcements - 5'
2. Recap and 30,000' summary - 5'
3. Discussion of Chapter VIII - 30'
4. Break - 5'
5. Inflation in the early universe - 30'
6. Summary - 5'

Here is the zoom link (is it the same one as before): <https://zoom.us/j/91367940095?pwd=WWNGVGJ4NU9FS1JLRW1haUNEUUIiQT09>

Peter

Peter Fisher
fisher_p@mac.com