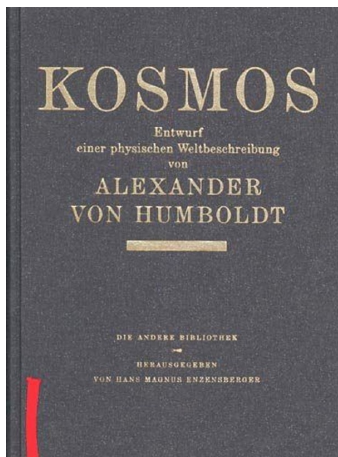




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Understanding the Kosmos: An endeavour without borders



New Delhi, January 28, 2014

Matthias Bartelmann
Heidelberg University, Centre for Astronomy



The Universe at Humboldt's time



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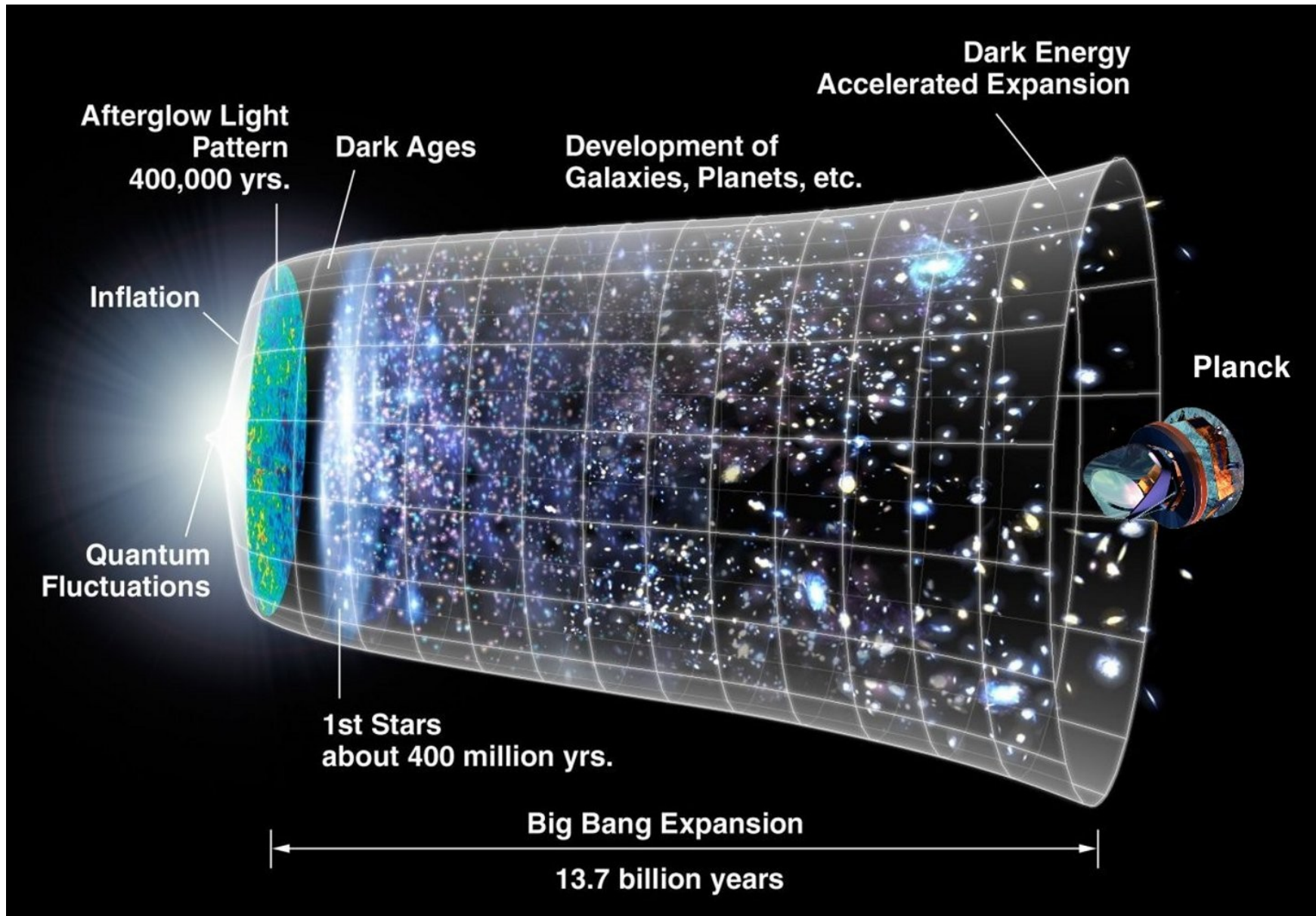
The Universe around 1920



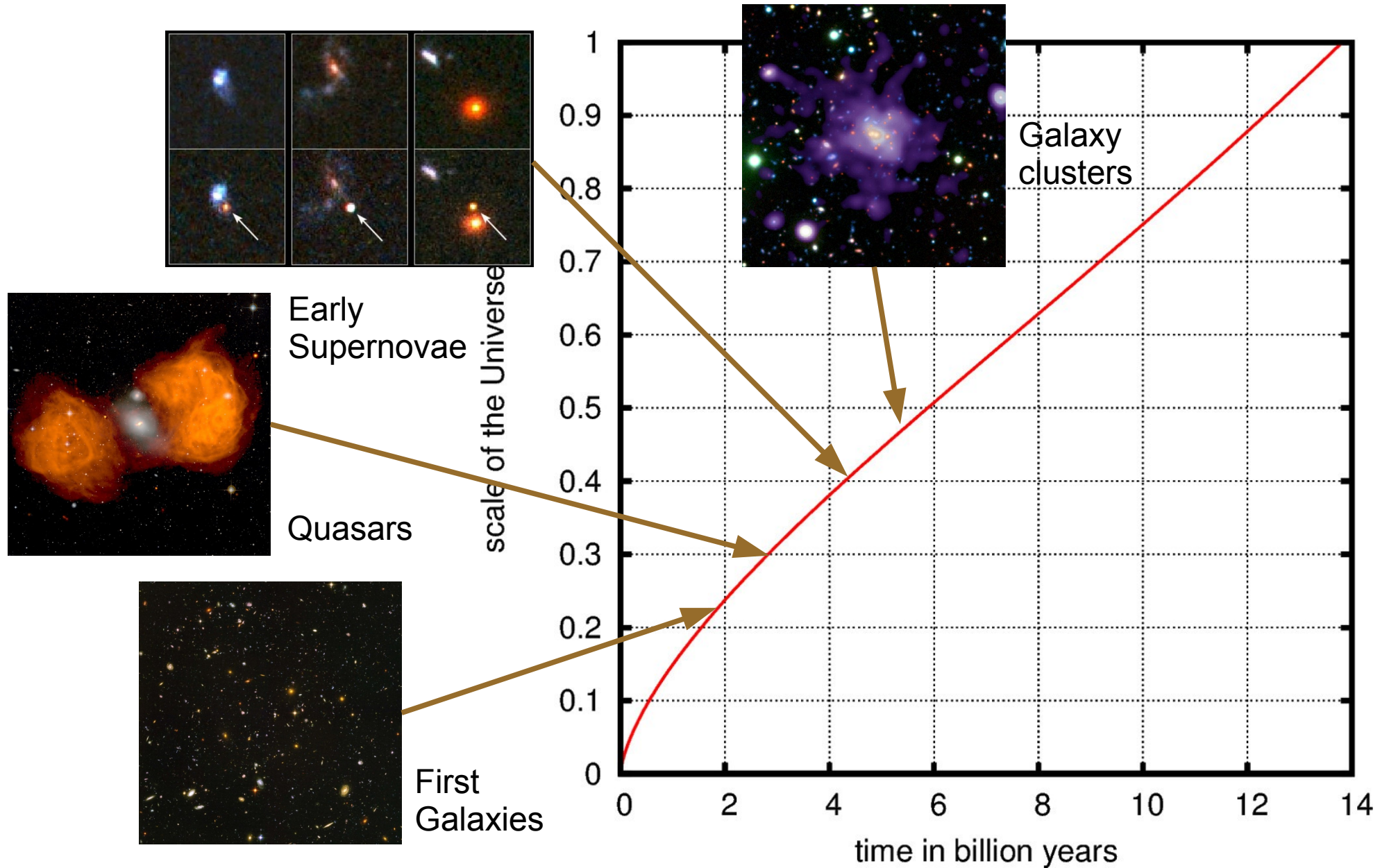
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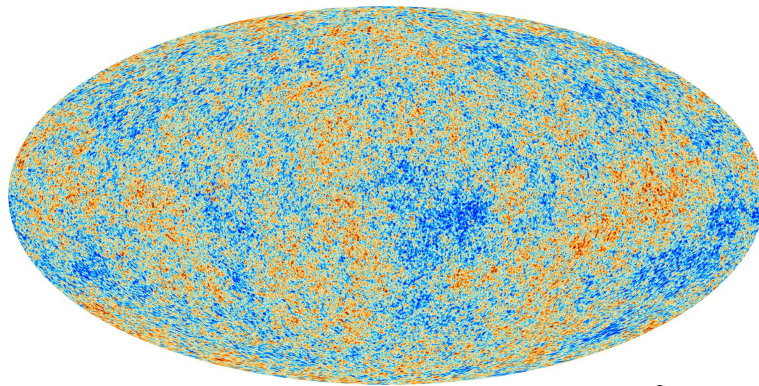
The Universe today



Evolution of the Universe



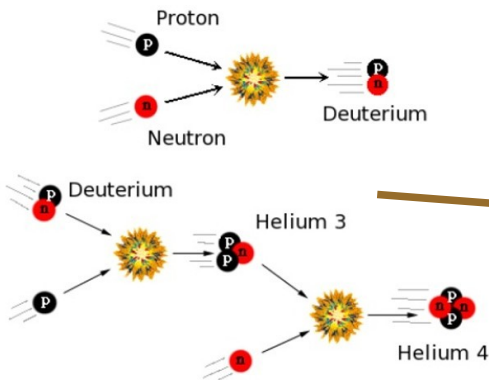
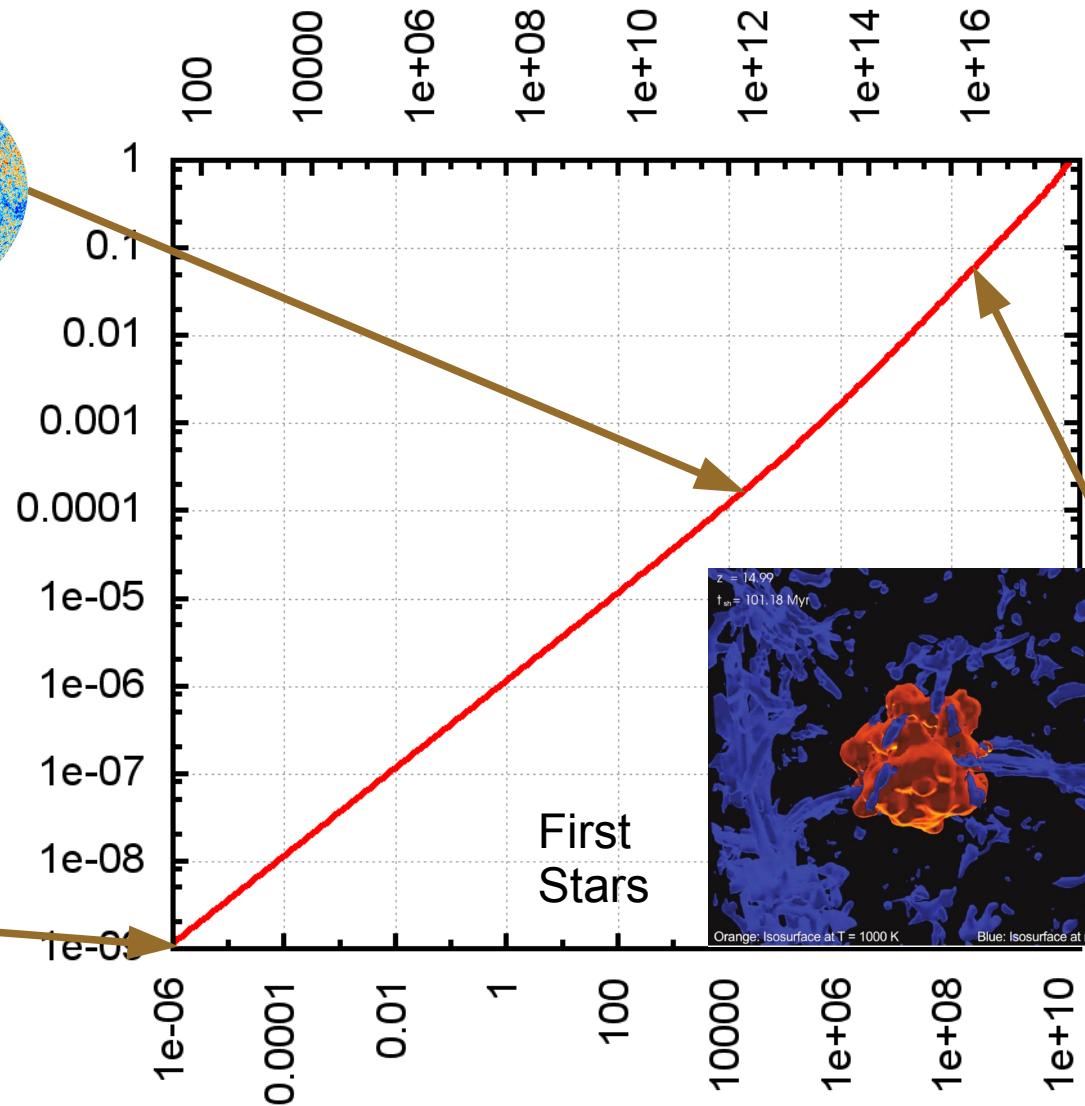
Evolution of the Universe



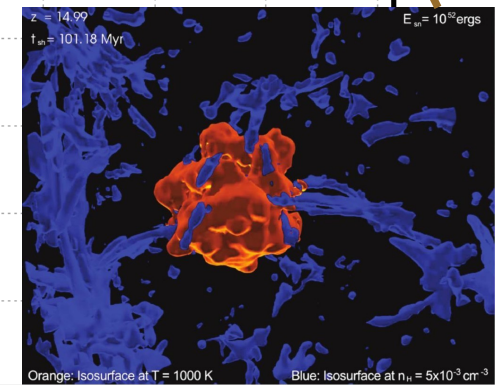
Cosmic
Microwave
Background

Größe des Universum

Zeit in Sekunden



Light
Elements

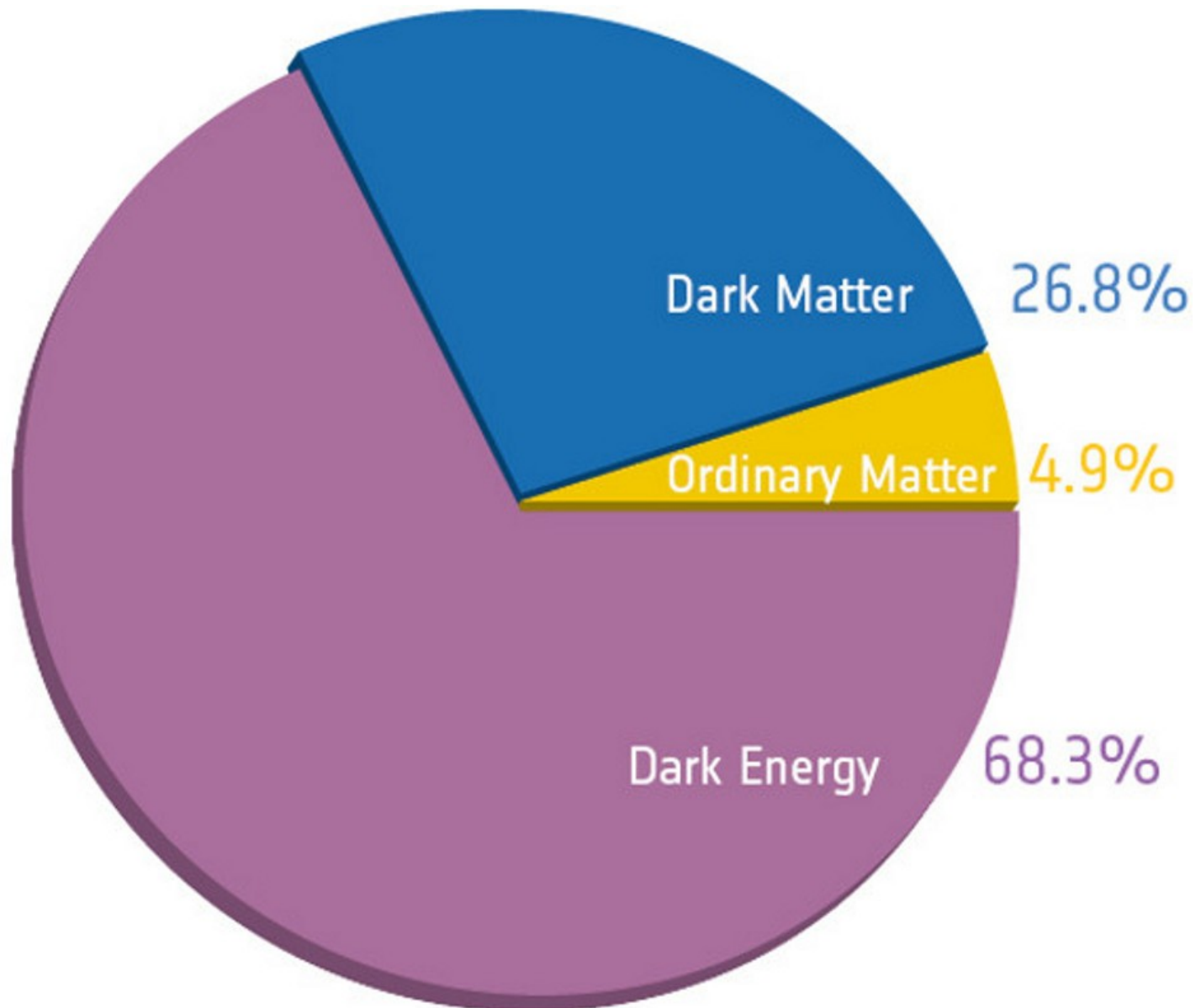


Zeit in Jahren

Composition of the Universe



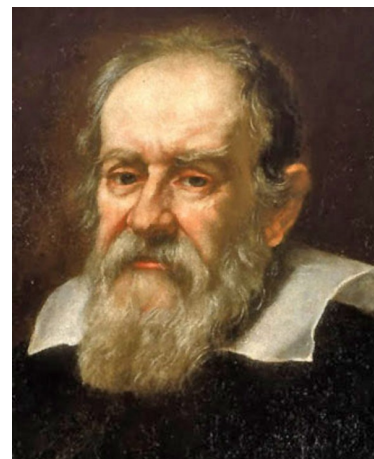
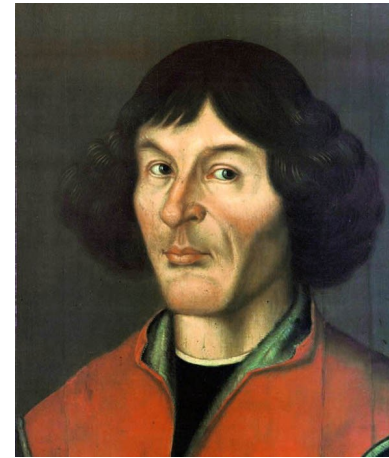
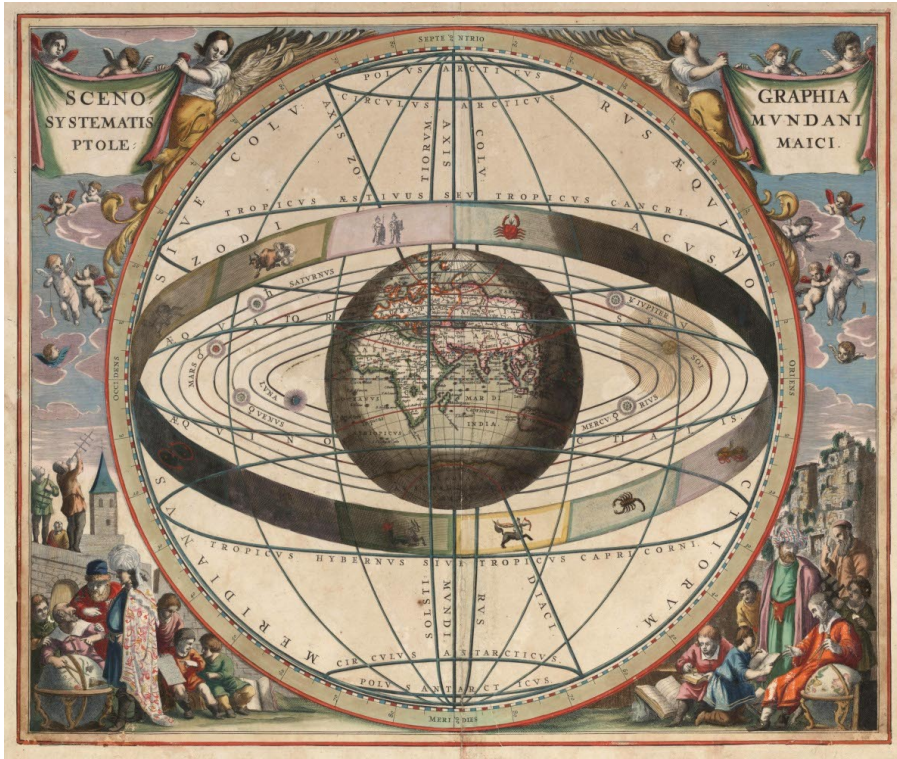
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How would we possibly know?



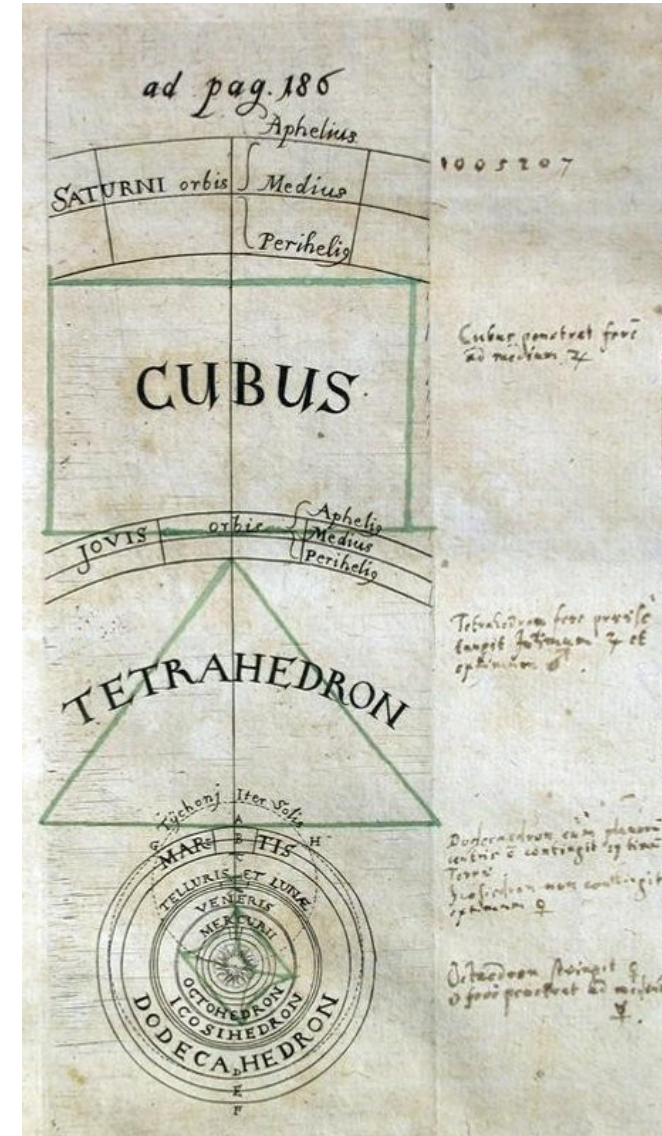
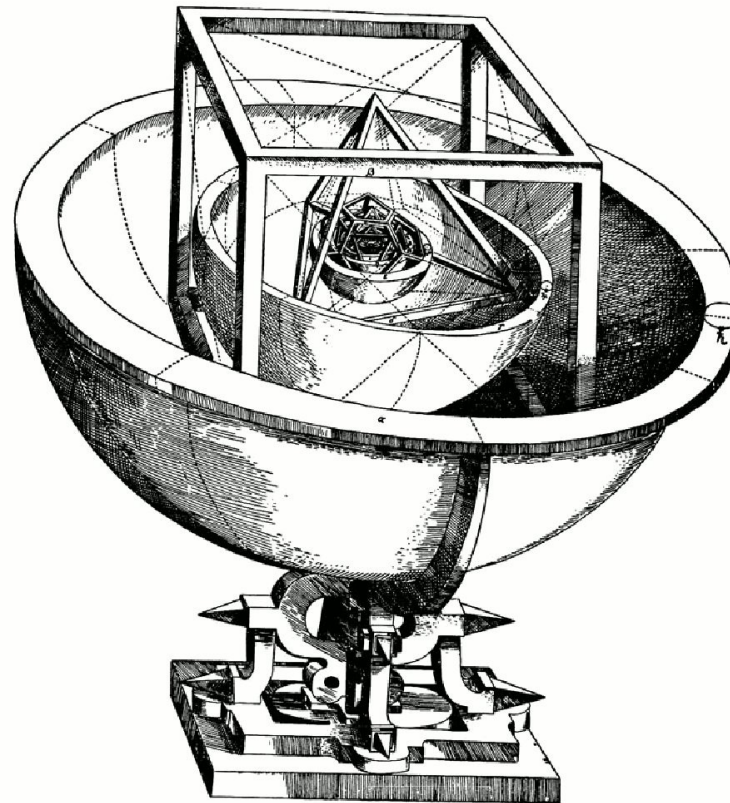
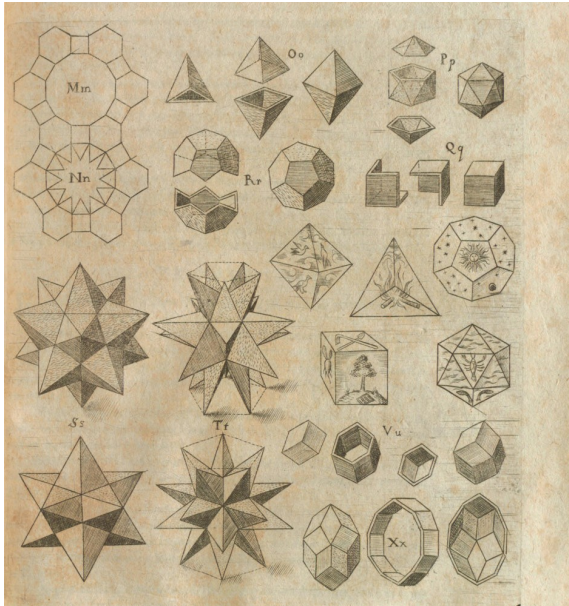
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Symmetry



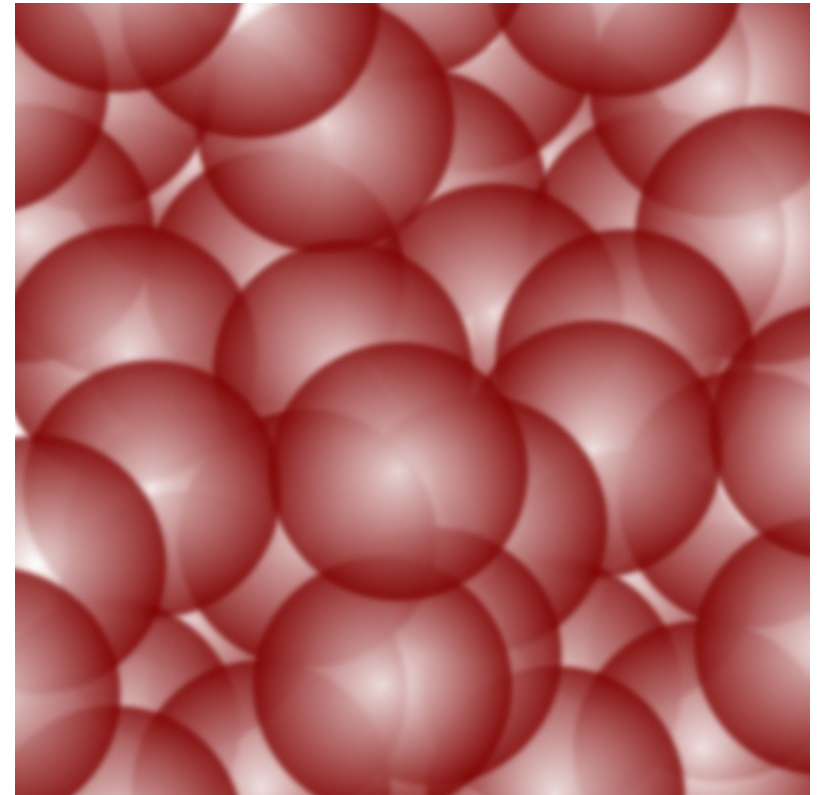
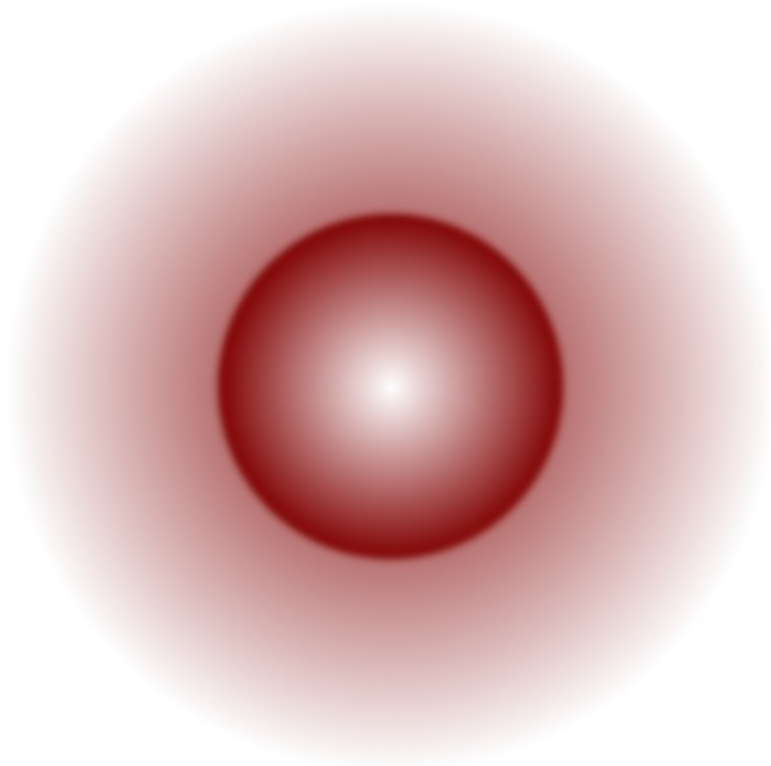
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Einstein, Friedman



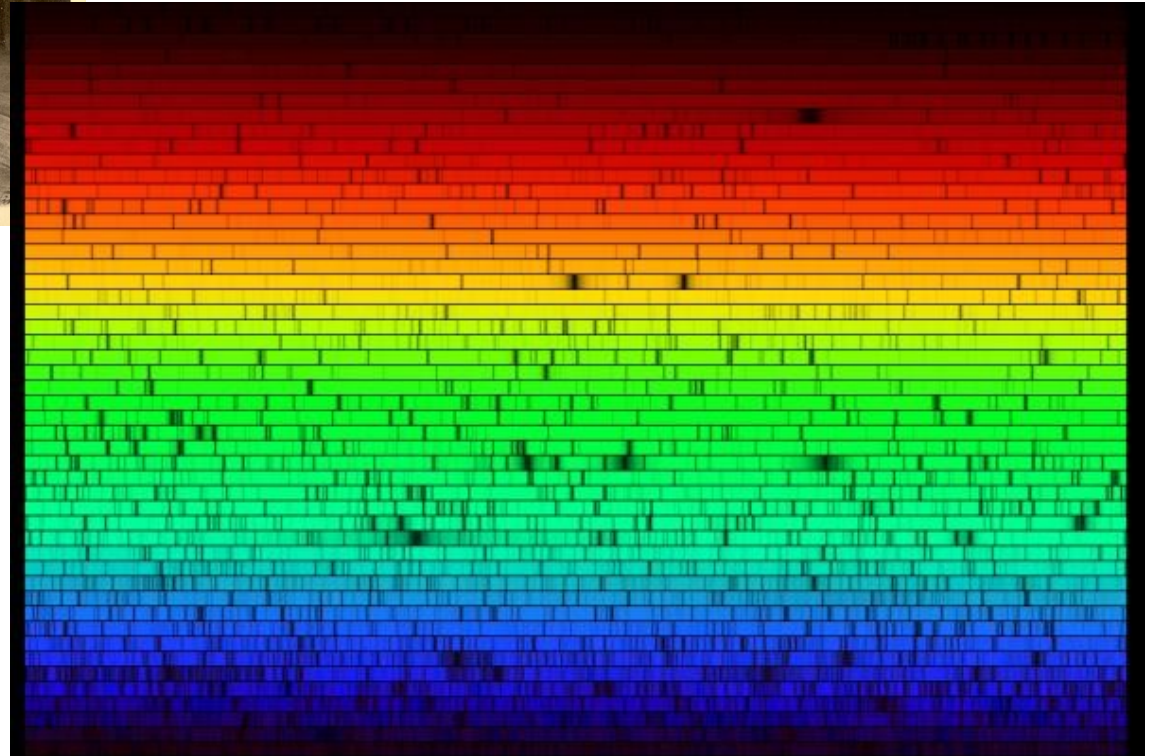
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Spectra



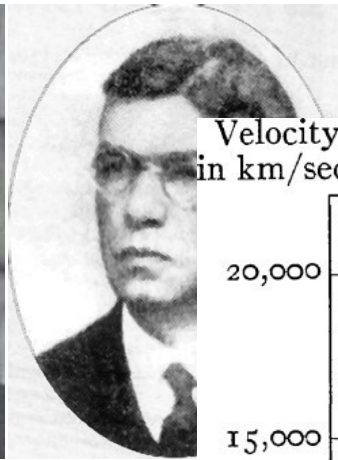
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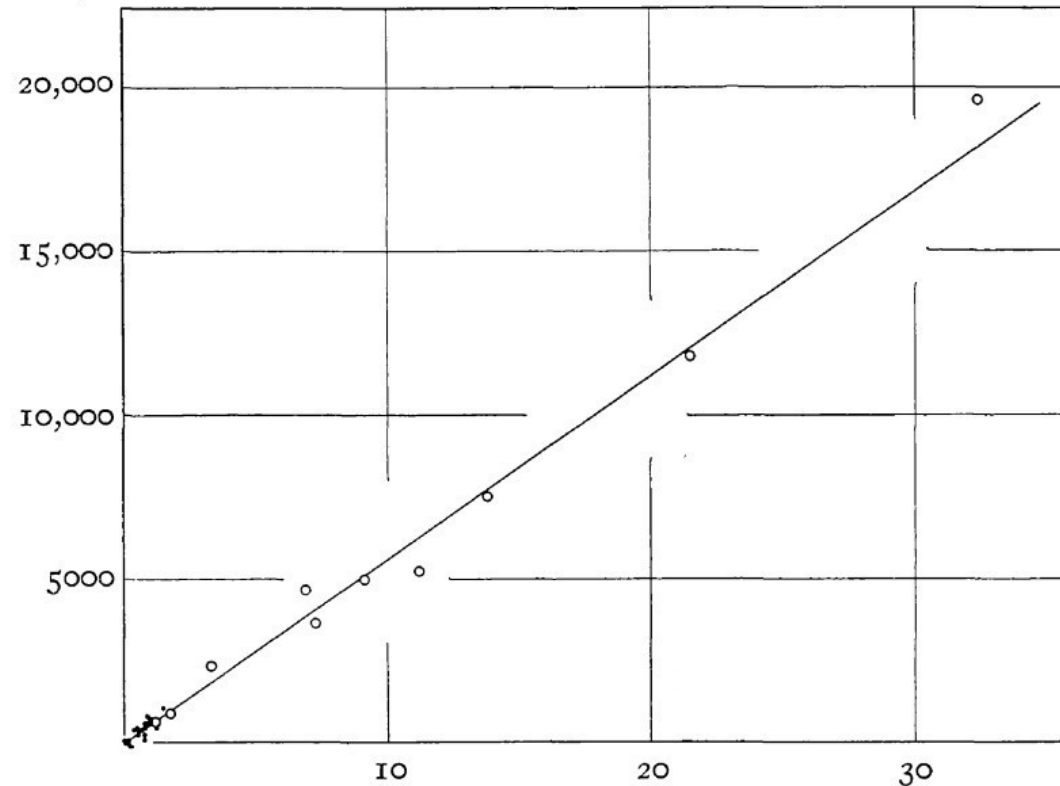
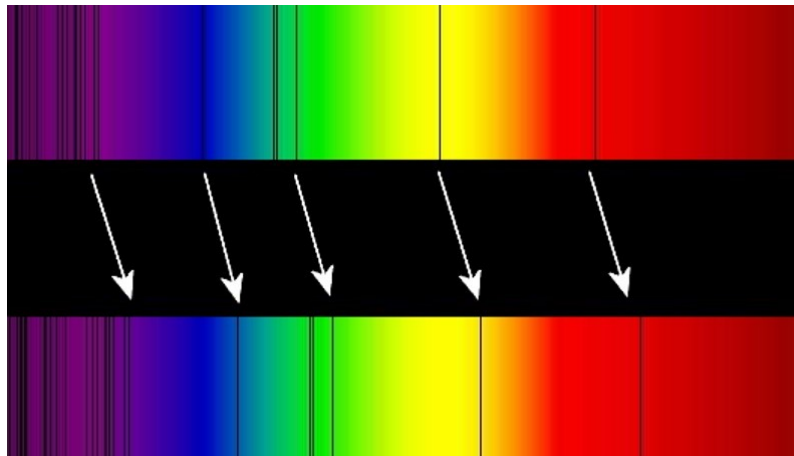
Description of the World: Galaxy Recession



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Velocity
in km/sec.

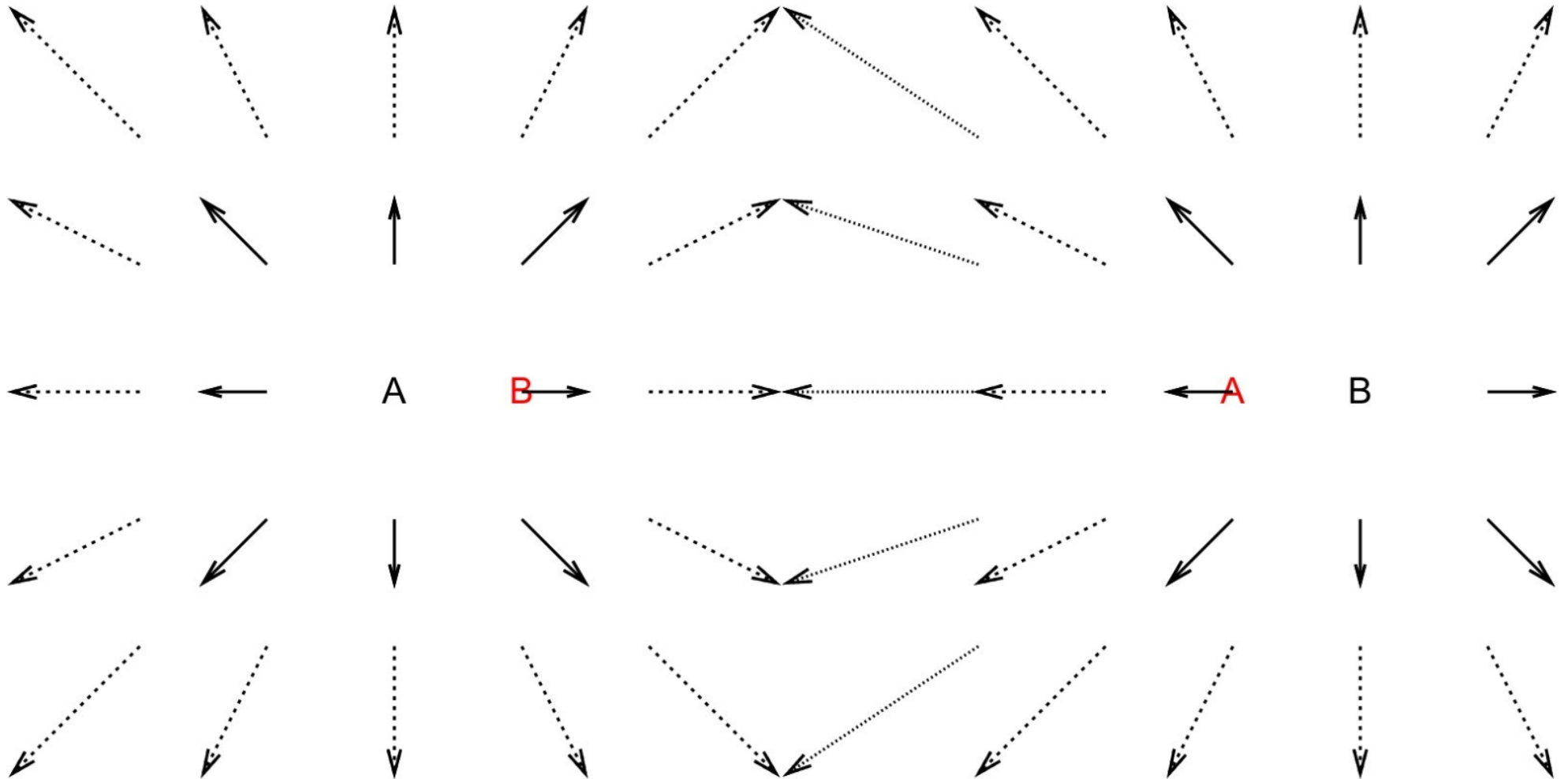


Distance in millions of parsecs

Description of the World: Expansion



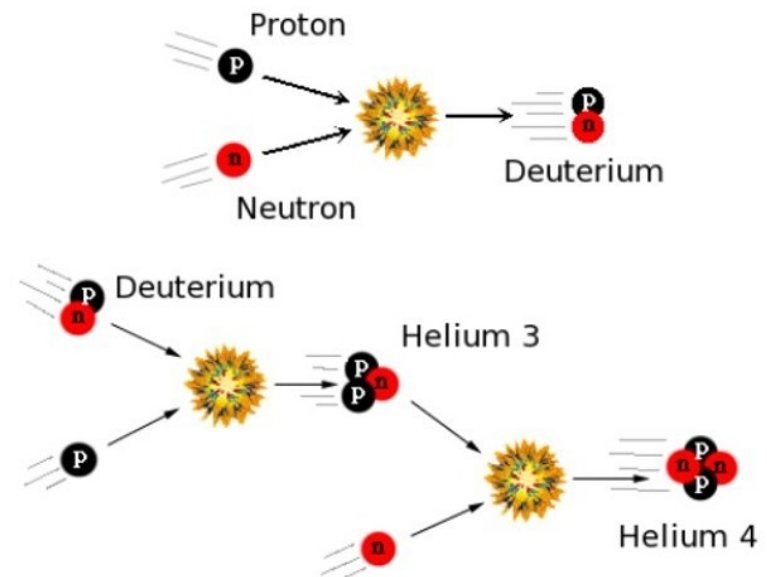
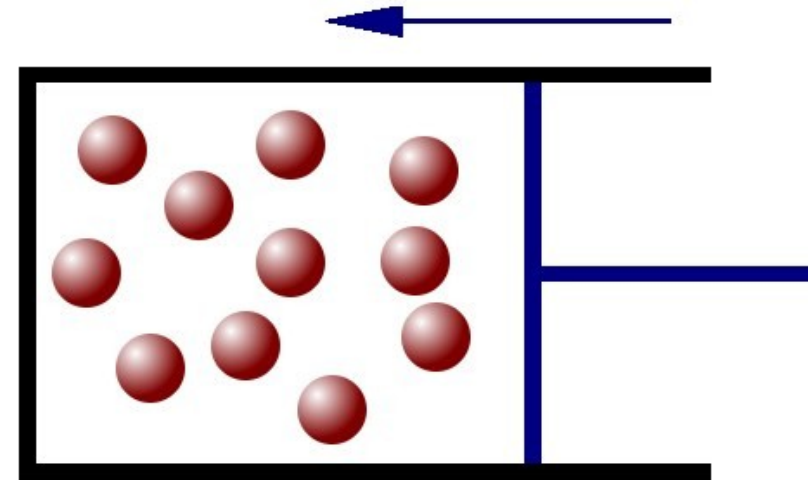
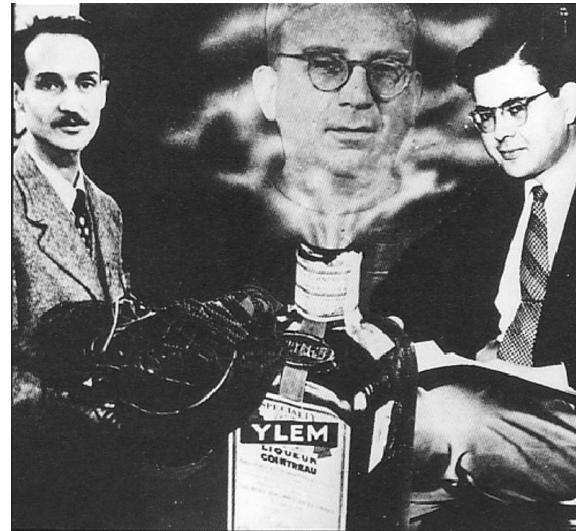
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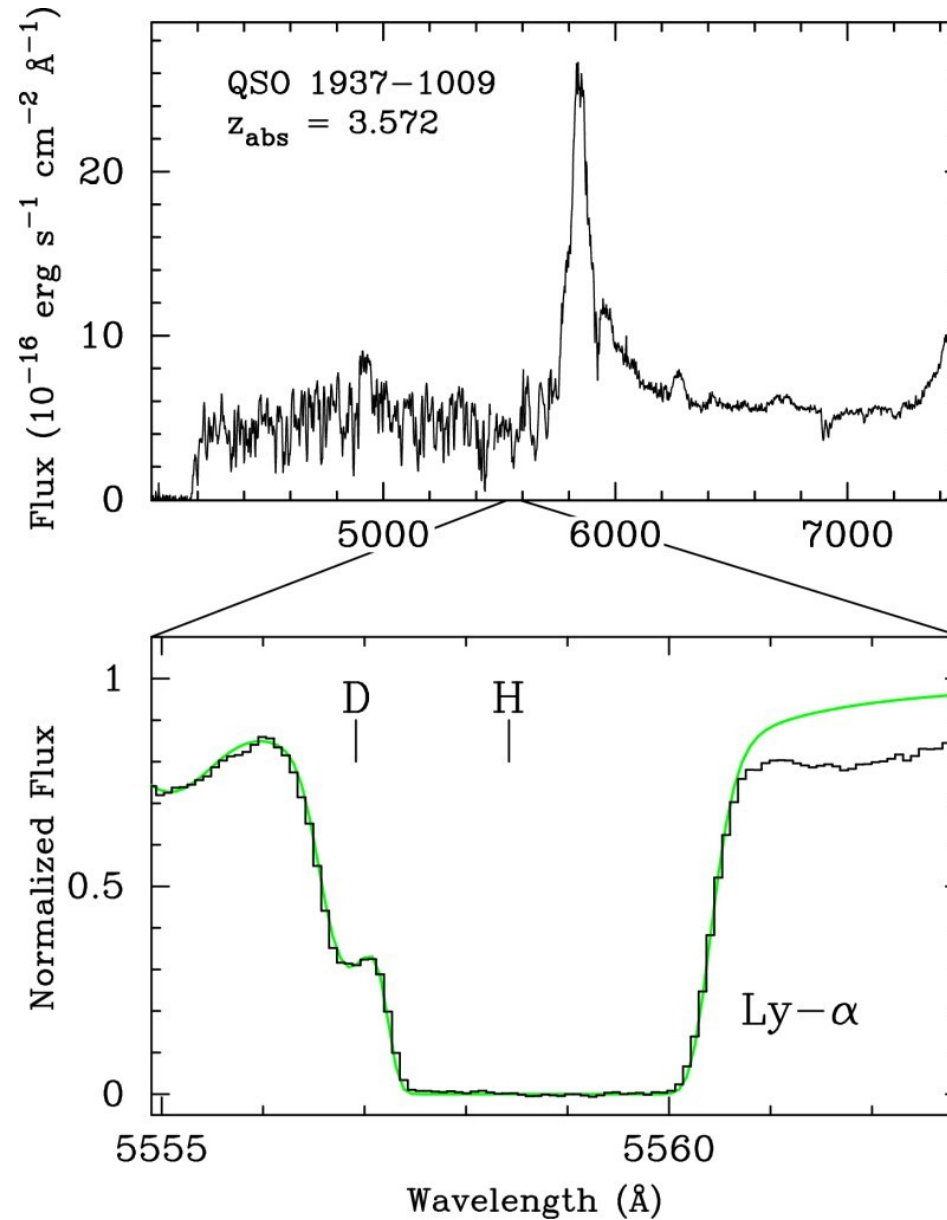
Description of the World: A Hot Beginning



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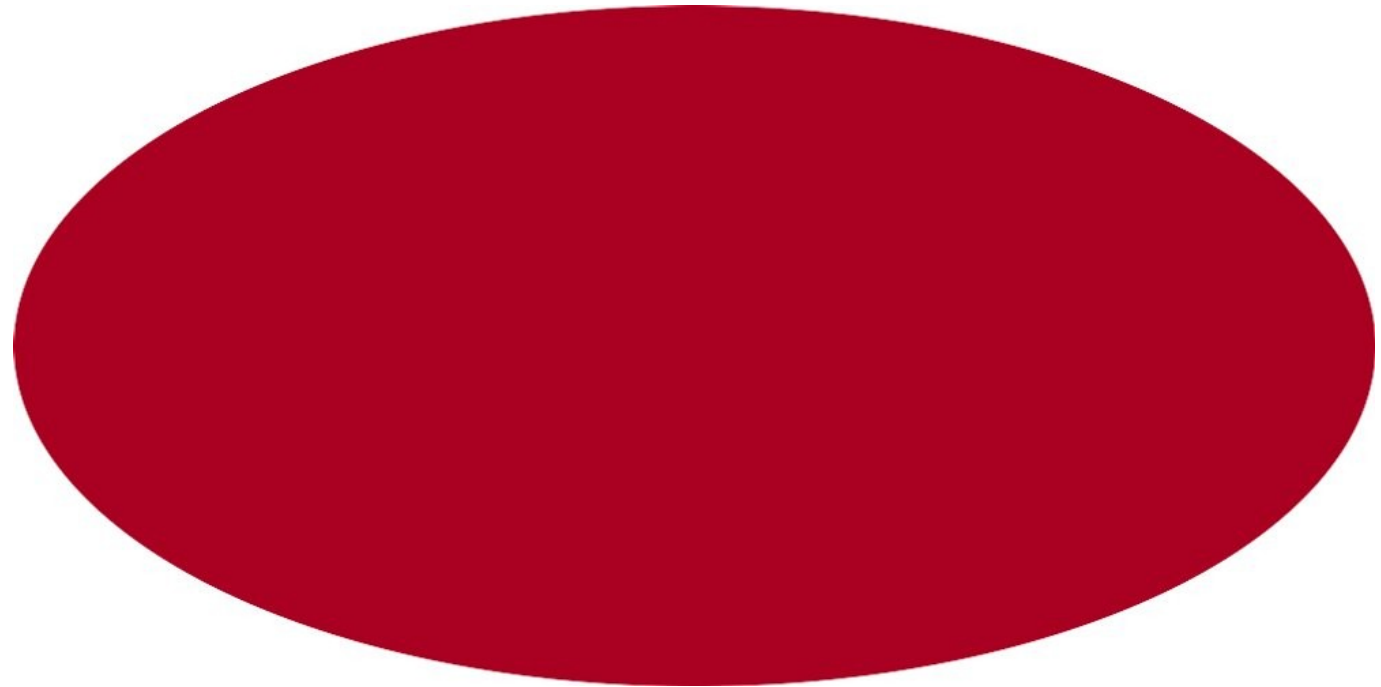
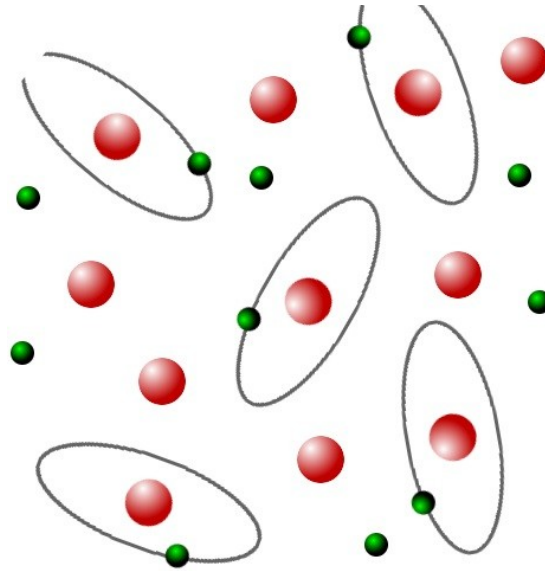
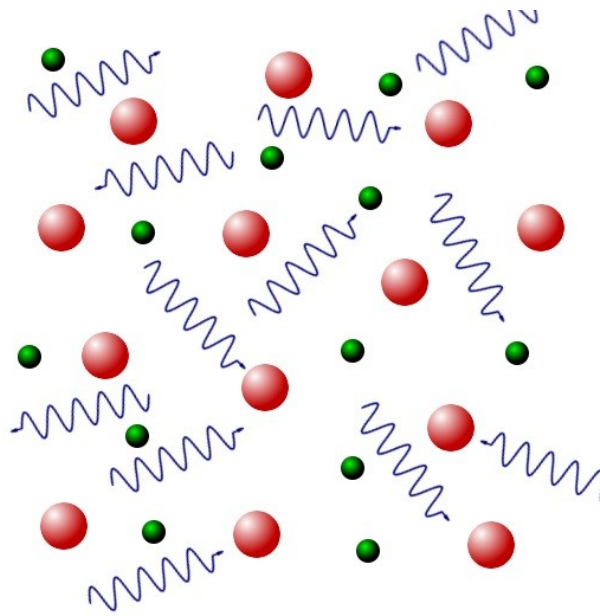
Description of the World: Element Abundances



Cosmic Microwave Background



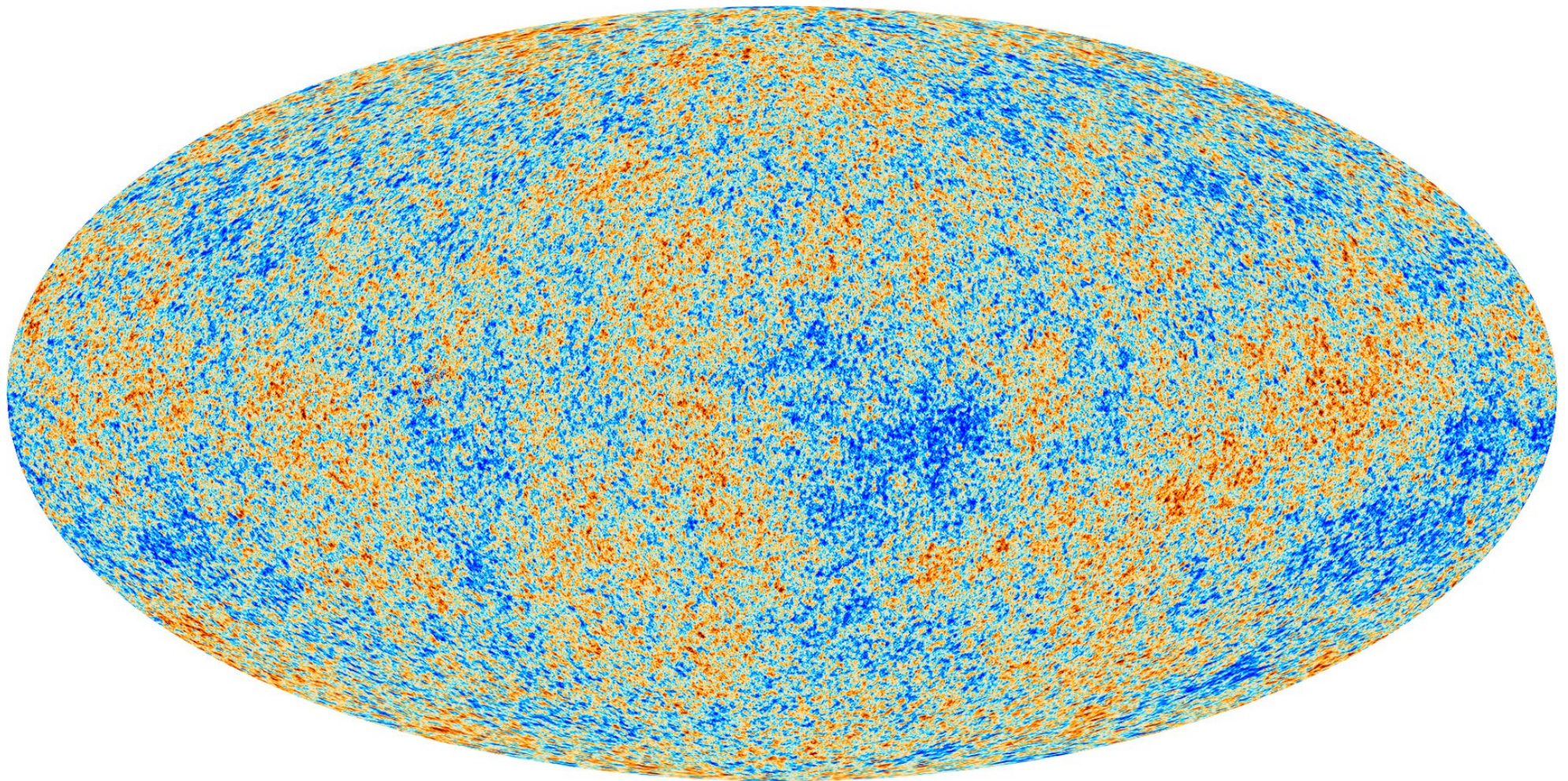
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Description of the World: Cosmic Microwave Background



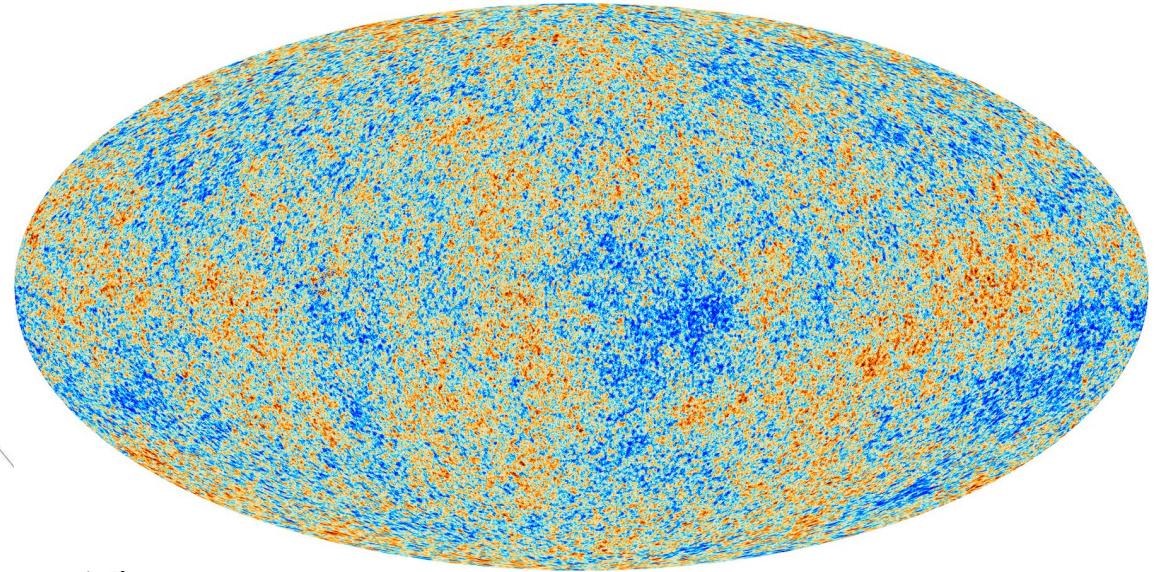
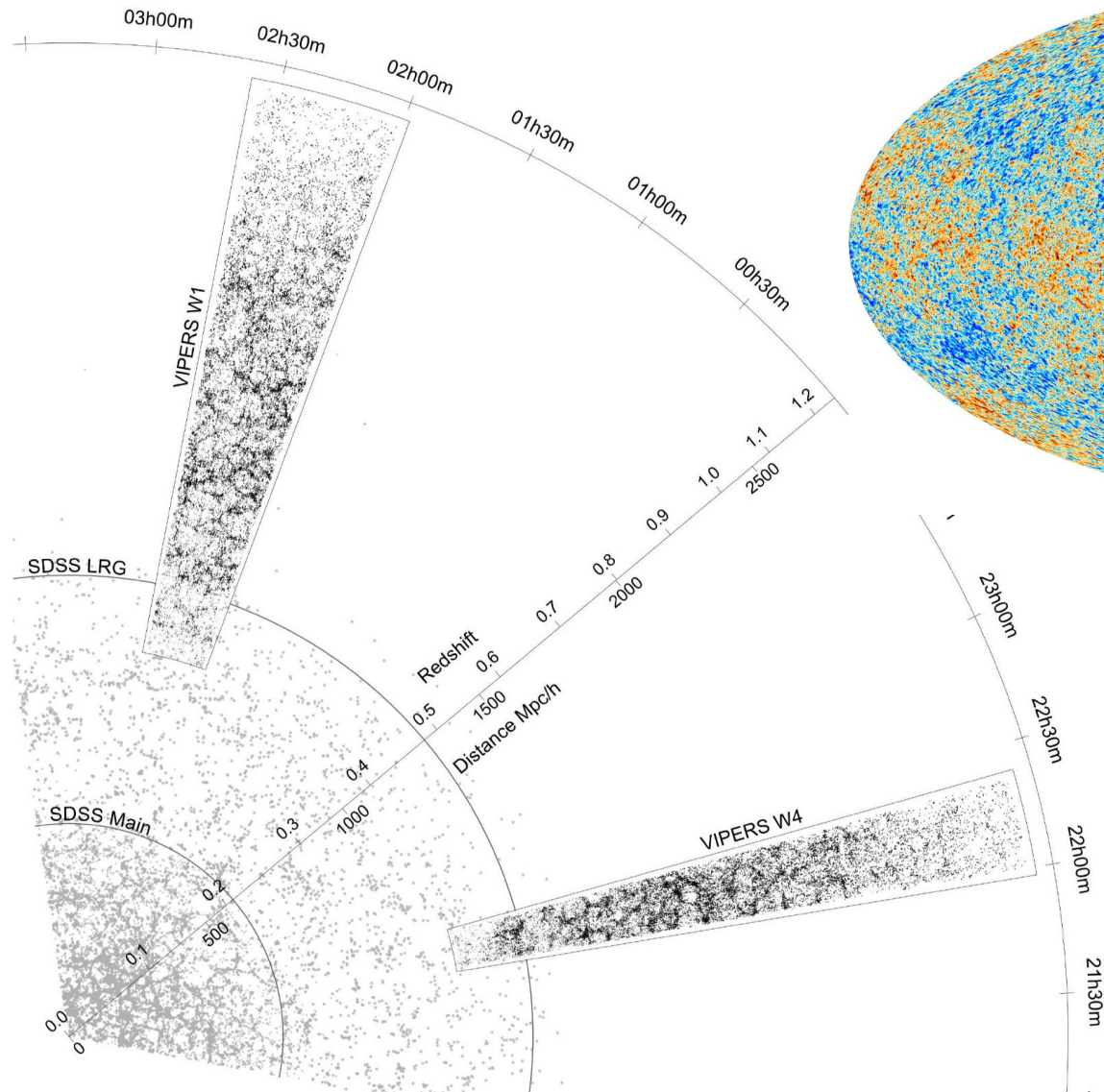
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Description of the World: Dark Matter



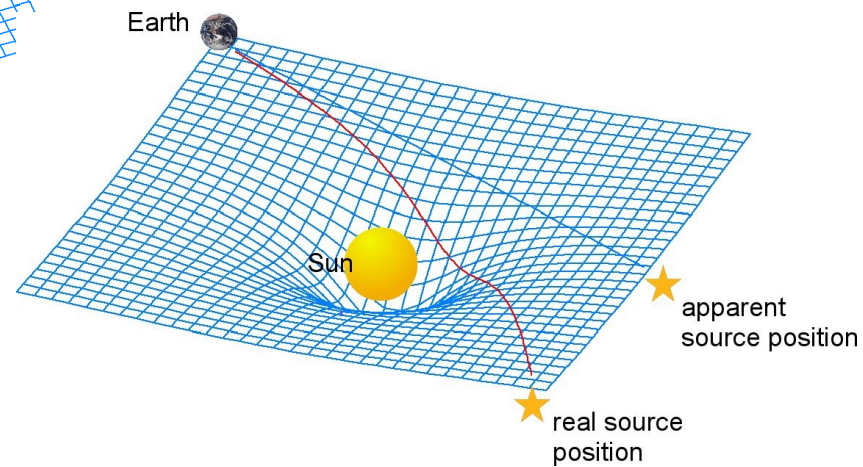
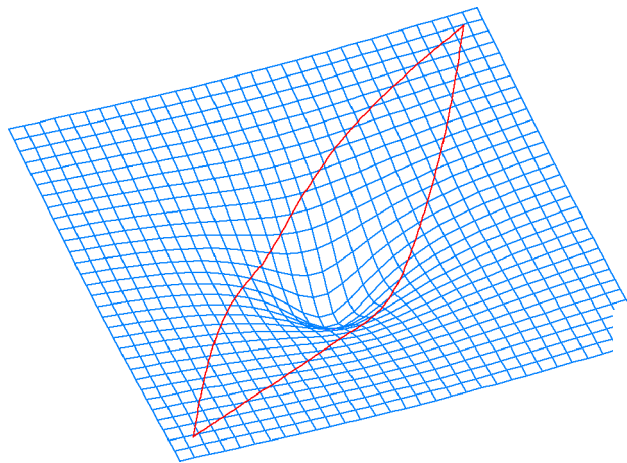
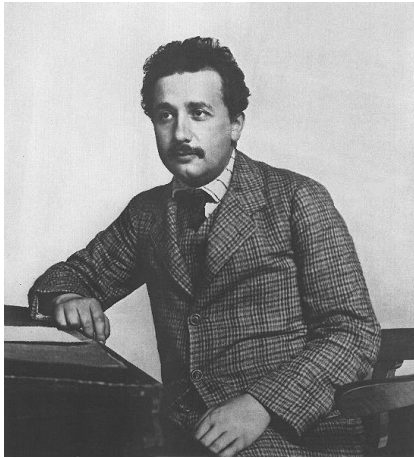
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Seeing Dark Matter: Gravitational Lenses



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Description of the World: Dark Matter



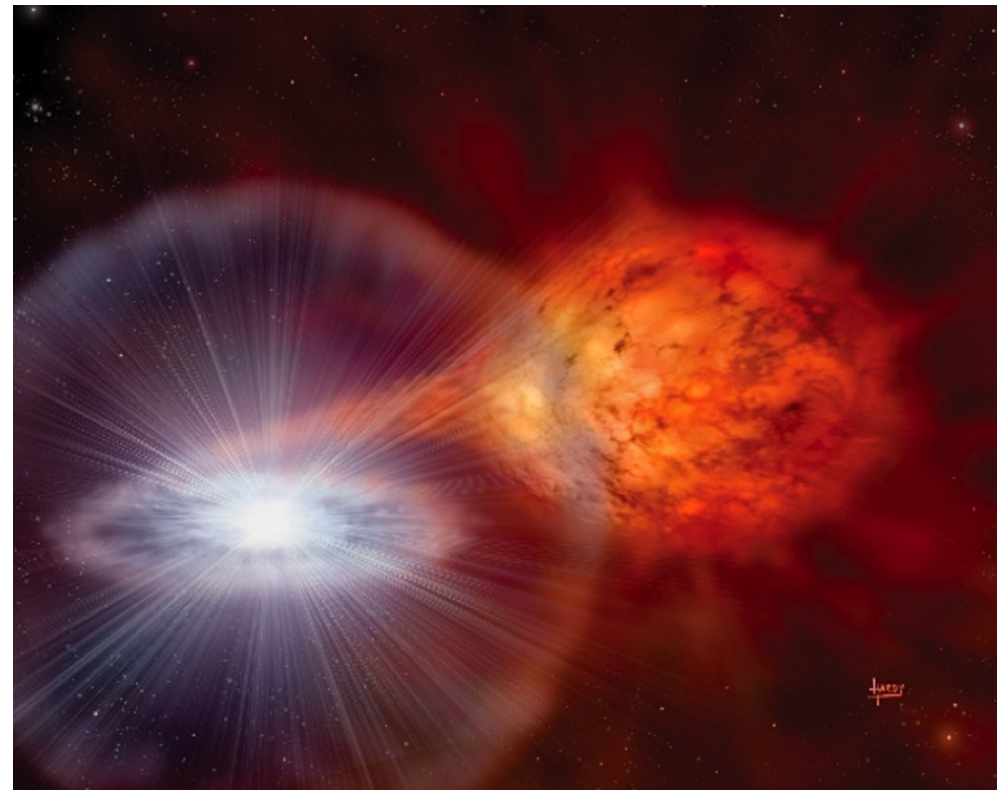
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Description of the World: Type-Ia Supernovae



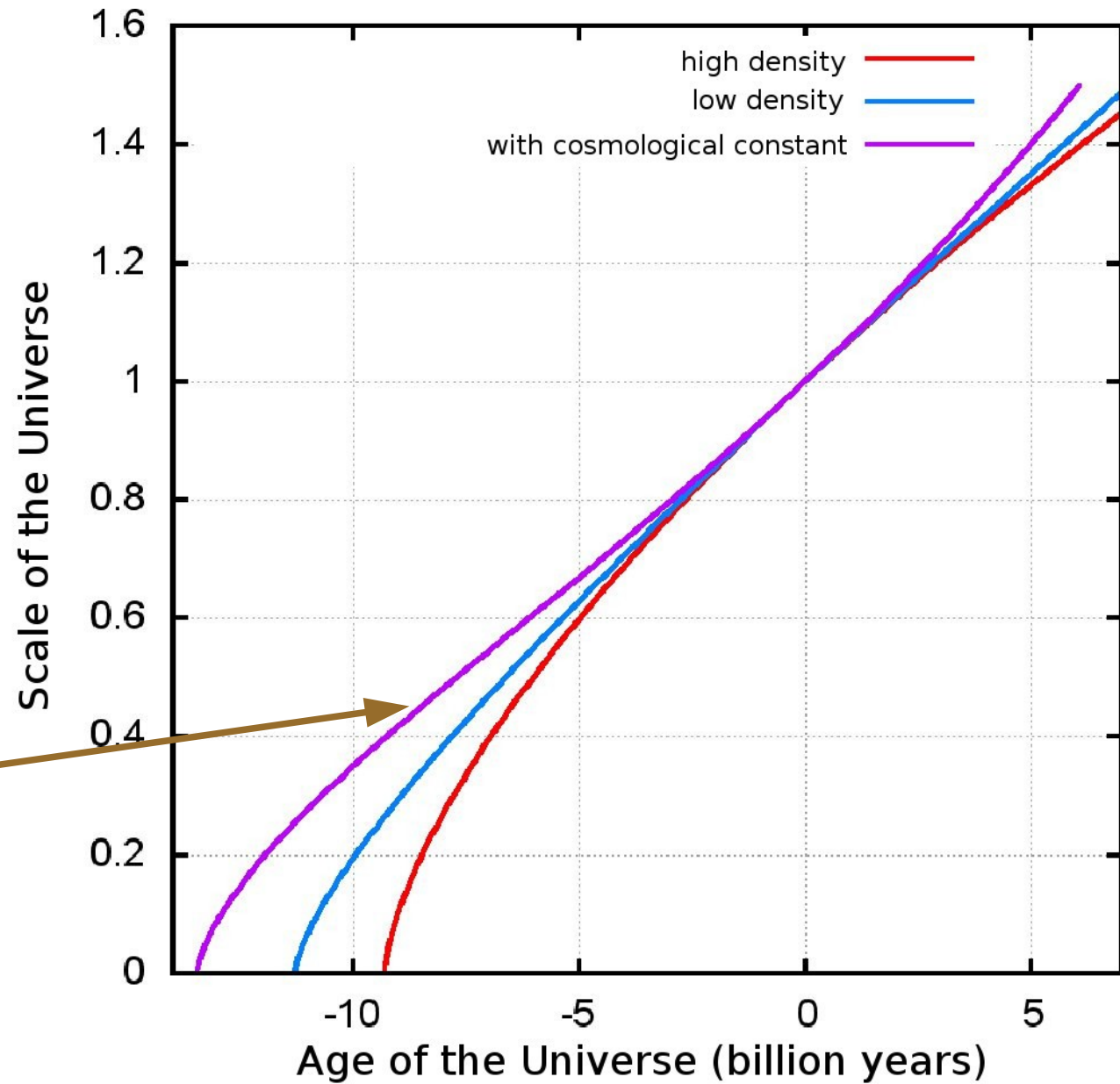
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Description of the World: Type-Ia Supernovae



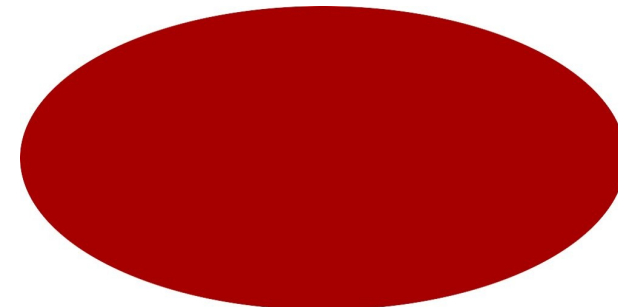
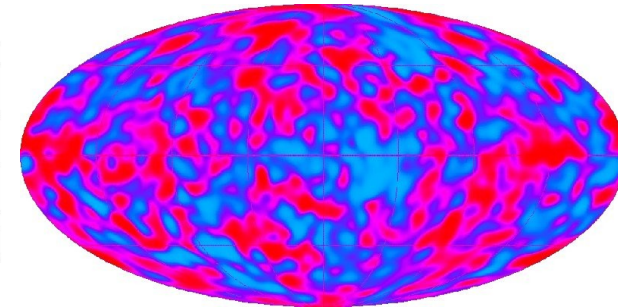
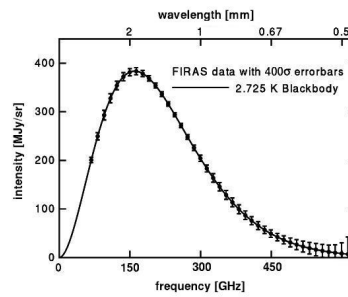
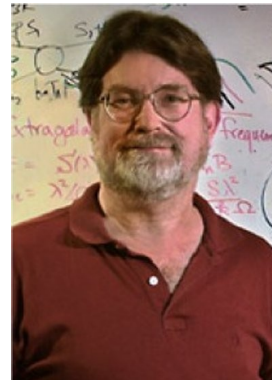
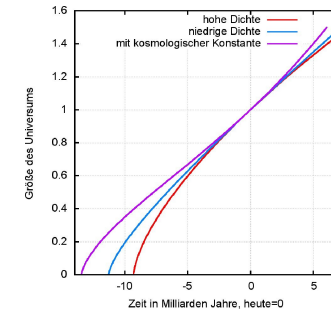
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Nobel Prizes



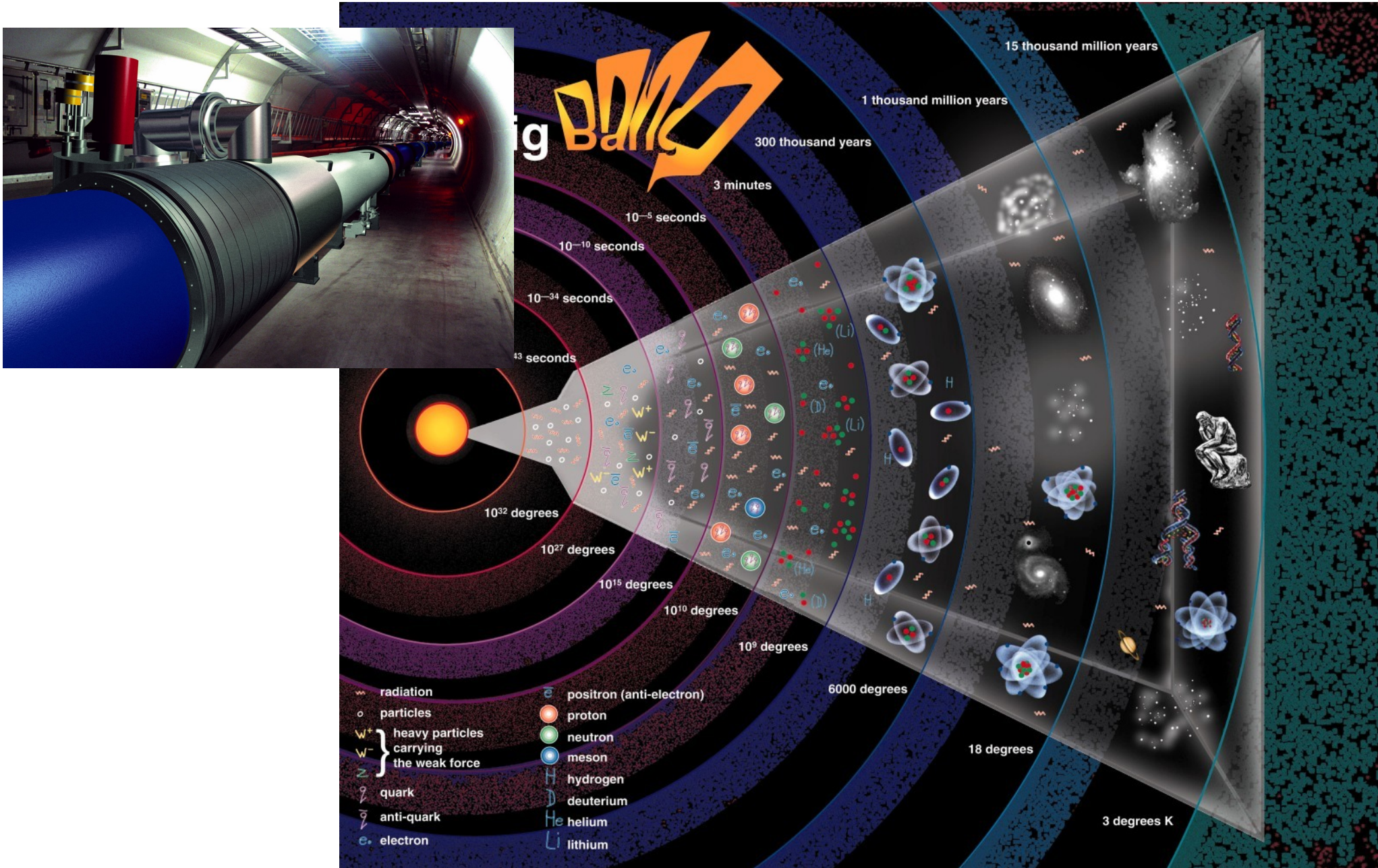
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Physics of the Hot Beginning



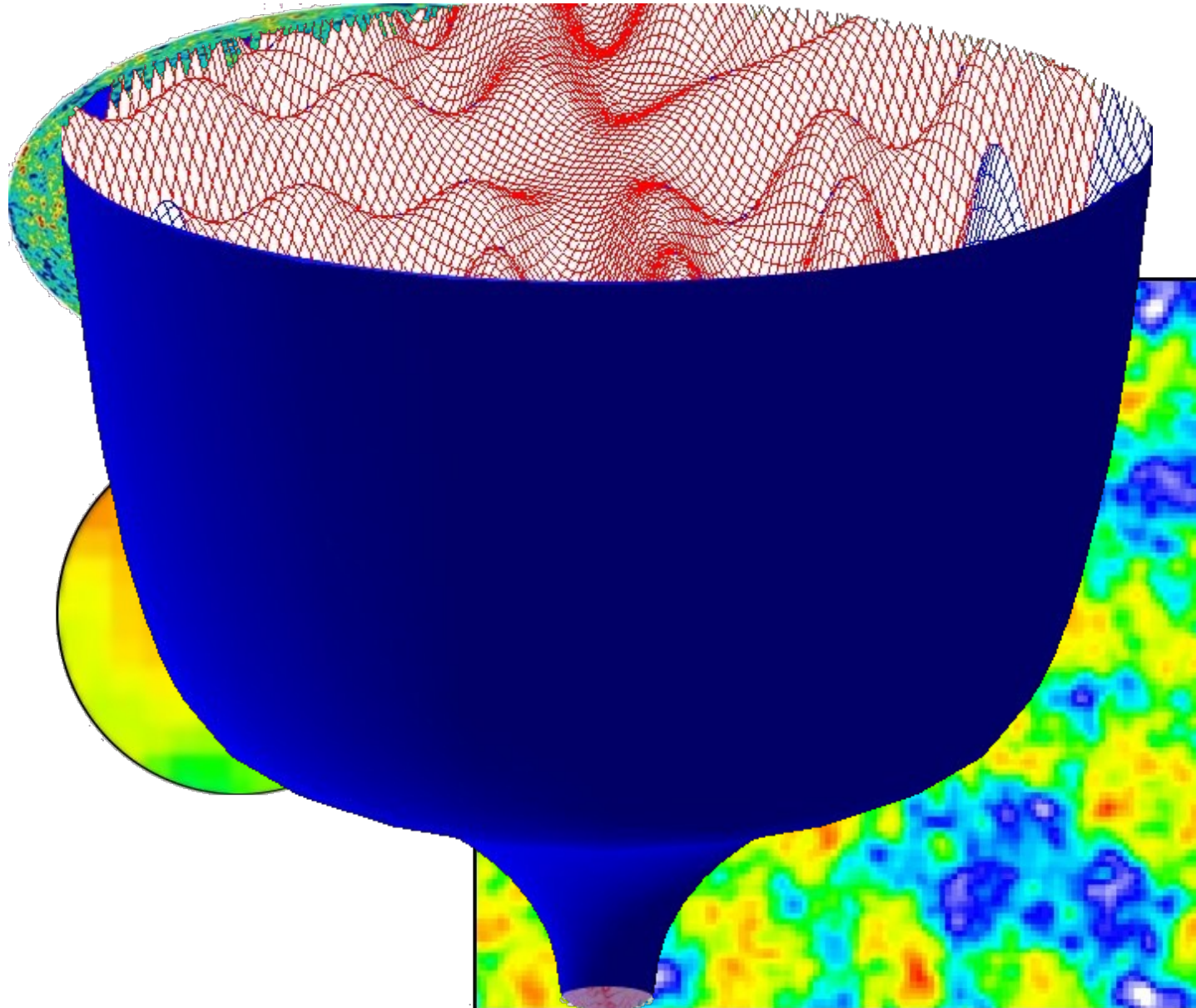
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Perspectives



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The Universe now



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