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Evolution of the Universe

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Cosmology is in the midst of a scientific revolution that is establishing its lasting foundations. The good agreement between many different sorts of observations and the predictions of the now-standard Lambda Cold Dark Matter (LCDM) theory gives us hope that this is humanity's first picture of the history of the universe as a whole that might actually be true. An unexpected feature of this new picture is that we humans appear to be central or special in many ways – for example, we are made of the rarest stuff in the universe (stardust); we are intermediate in size between the smallest possible size (the Planck length) and the largest size (the cosmic horizon); and we are living at a pivotal time: the period in the history of the universe when its expansion began to accelerate rather than slow down, and in the middle of the ten-billion-year lifetime of our solar system and of the billion year most habitable period of our planet, and at what must be the end of the exponential growth of human impact on the earth. This talk[1] will review key observations that support modern cosmology, describe some symbolic ways of understanding the modern cosmos, and discuss some possible implications of a cosmic perspective for our 21st century worldview.

[1]Based on a new book, The View from the Center of the Universe: Discovering Our Extraordinary Place in the Cosmos, by Joel R. Primack and Nancy Ellen Abrams (Riverhead Books, April 2006).