

Dark energy is real : results from the WiggleZ Survey

Scientific figures

Figure 1: This figure illustrates our detection in the galaxy distribution of the *baryon acoustic oscillations*, which is a small preference for pairs of galaxies to be separated by about 490 million light years, or 150 million parsecs. A count has been made of the separation of all unique pairs of galaxies in the survey, and this has been compared to the number of pairs expected just by chance. The y -axis of this plot is related to that ratio, and the x -axis is the pair separation. This preferred galaxy separation is used as a standard ruler to measure cosmic distances.

Baryon acoustic oscillation standard ruler in WiggleZ

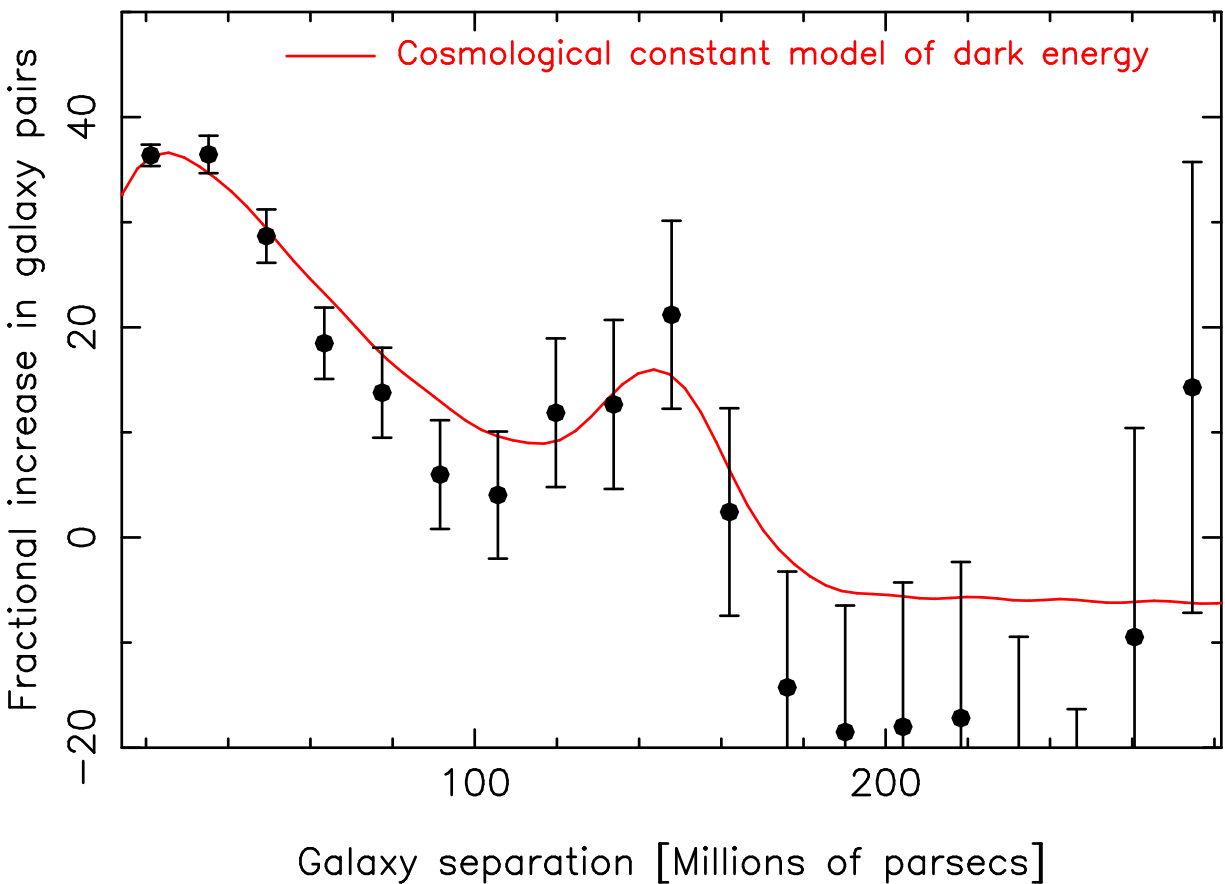


Figure 2: In this figure the cosmic distance measured by the WiggleZ survey, to a look-back time of 6 billion years, is compared with the distances measured by previous galaxy datasets (the Sloan Digital Sky Survey). The red line is the distance-redshift relation predicted by a cosmological constant dark energy model. The WiggleZ Survey has extended our knowledge of this distance relation to much earlier cosmic times.

Map of the expansion history of the Universe

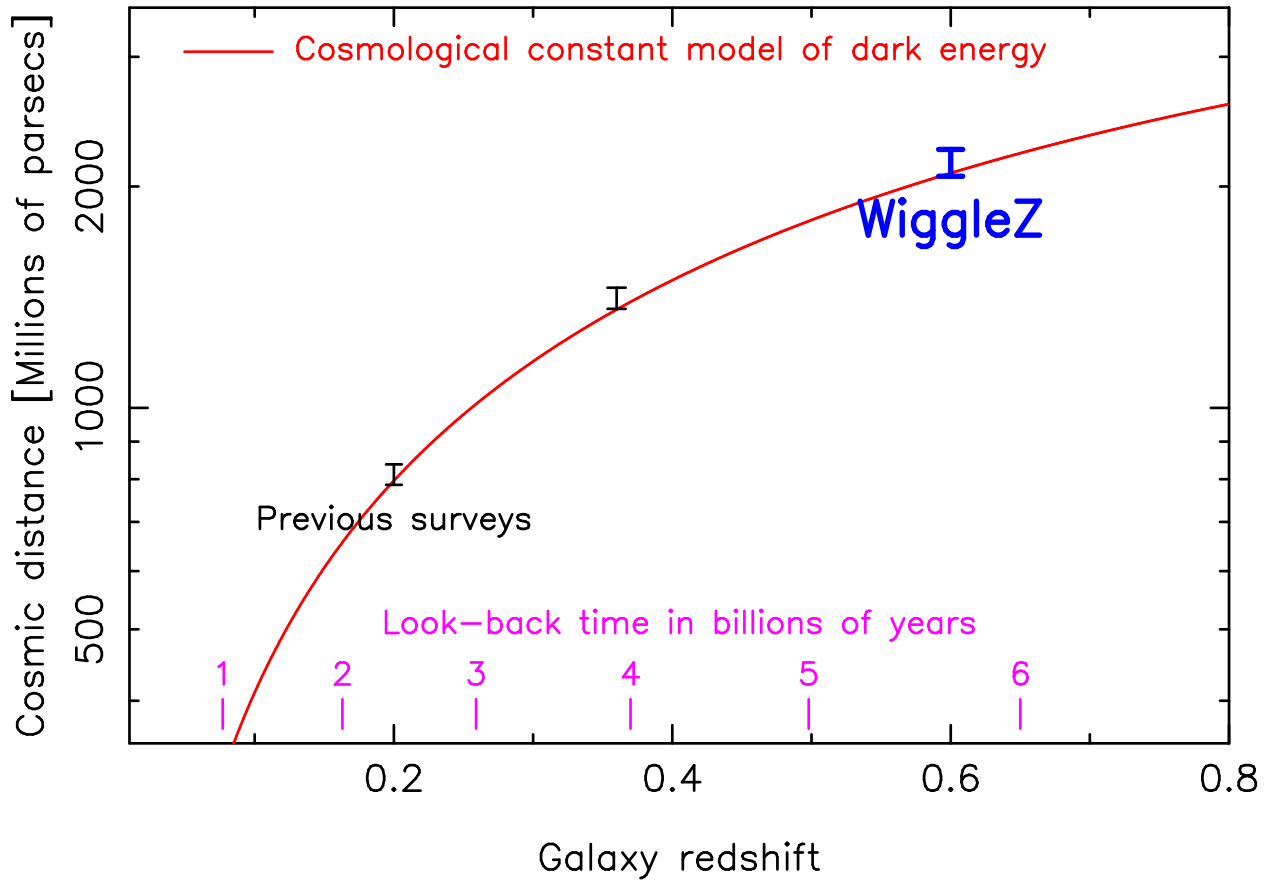


Figure 3: In this figure the WiggleZ measurements of the growth rate of cosmic structure over the last 7 billion years of look-back time are compared with those of previous surveys. The red line is the growth rate predicted by a cosmological constant dark energy model, which slows down as time goes by owing to the anti-gravity effect of dark energy. The WiggleZ Survey has provided the most accurate and complete map of this growth history.

Map of the growth history of the Universe

