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ASTRONOMY

Cosmologists closing in on exact age of universe

Tuesday, April 15, 2008 3:06 AM

BY TOM STATLER

Looking for a new smooth, sophisticated line to impress your date? Try this one: "You know, we're living in the era of precision cosmology."



OK, it's not likely to work, but it's true.

Cosmologists, the people who worry about the structure of our expanding universe, have a firm enough handle on the numbers that we now know the age of "everything" to be 13.73 billion years, with a margin of error of less than 1 percent.

And they're just getting started.

In 1970, astronomer Allan Sandage described cosmology as a "search for two numbers" -- the rate of expansion and the rate at which it's slowing because of gravity.

For decades, neither could be pinned down with accuracy better than 50 percent.

But today, our description of the universe is far more detailed. Thanks to measurements from aircraft, balloons, orbiting satellites and ground-based telescopes, we know that ordinary atoms account for not quite

5 percent of the total matter, and that an early generation of stars or black holes warmed intergalactic space when the universe was 8 percent of its present size.

The measurements are so precise that it's getting hard to escape the conclusion that the expansion of the universe is speeding up, not slowing down, as Sandage -- and everyone else -- presumed.

The search is on for the mysterious accelerator. This summer, NASA and the U.S. Department of Energy will review three competing proposals for the "Joint Dark Energy Mission," an orbiting telescope designed to measure so-called dark-energy properties with unprecedented precision.

The competitors are the Dark Energy Space Telescope, the Advanced Dark Energy Space Telescope and the Supernova Acceleration Probe.

Some researchers have questioned the value of making high-precision measurements before we have a physical understanding of what is being measured. But new information will inevitably lead to better knowledge of the universe.

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