

20 December 2011

As always, *Physics Today's* Search and Discovery department spent the past year reporting on the most important and interesting news in physics and related sciences. Among the year's highlights were the following:

The most massive neutron star ever seen

If neutron stars can be twice as massive as the Sun, most conjectures about exotic states of matter at maximum compression are ruled out.

JANUARY

A Bose–Einstein condensate of photons

Key to the achievement is the confinement of photons and molecules in an optical cavity long enough for them to reach thermal equilibrium.

FEBRUARY

The discovery of a huge reservoir of solid carbon dioxide on Mars

Radar data reveal a solid reservoir that contains almost as much carbon dioxide as the planet's entire atmosphere.

JUNE

The conclusion of Gravity Probe B's 50-year mission

A conceptually simple experiment confirmed two predictions of general relativity, but not with the hoped-for precision.

JULY

A new limit on the electron's electric dipole moment

Most proposed extensions of particle theory's standard model predict that the electron has an electric dipole moment just big enough to measure with new molecular-beam techniques.

AUGUST

The demonstration of gravitational lensing of the cosmic microwave background

From the data's statistical properties, researchers can determine that the background has been gravitationally distorted without their knowing where the distorting foreground structures are.

AUGUST

Short-range spin waves as a possible mediator of high-temperature superconductivity

For the first time, the waves have been shown to exist across the entire range of superconducting cuprates.

SEPTEMBER

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