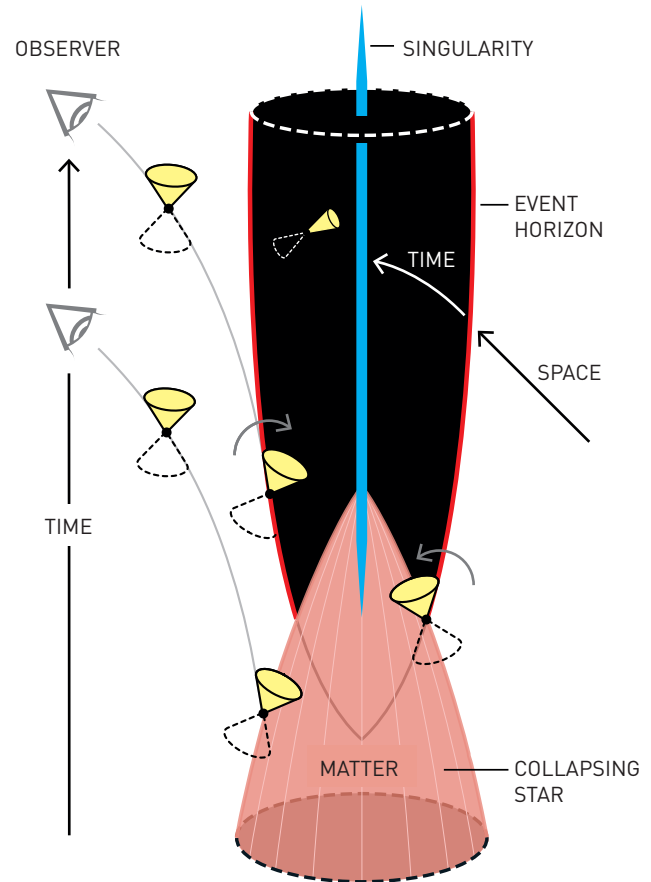
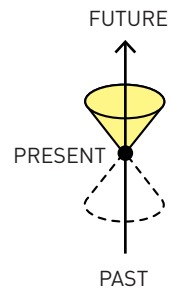
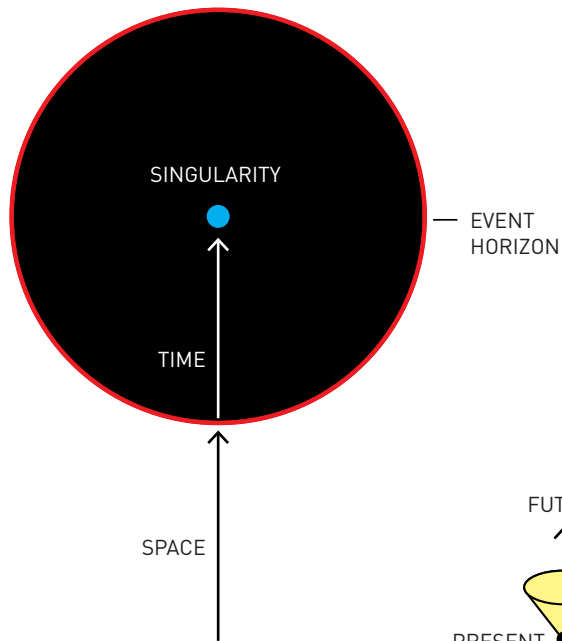


Cross section of a black hole

When a massive star collapses under its own gravity, it forms a black hole that is so heavy that it captures everything that passes its event horizon. Not even light can escape. At the event horizon, time replaces space and points only forward. The flow of time carries everything towards a singularity furthest inside the black hole, where density is infinite and time ends.

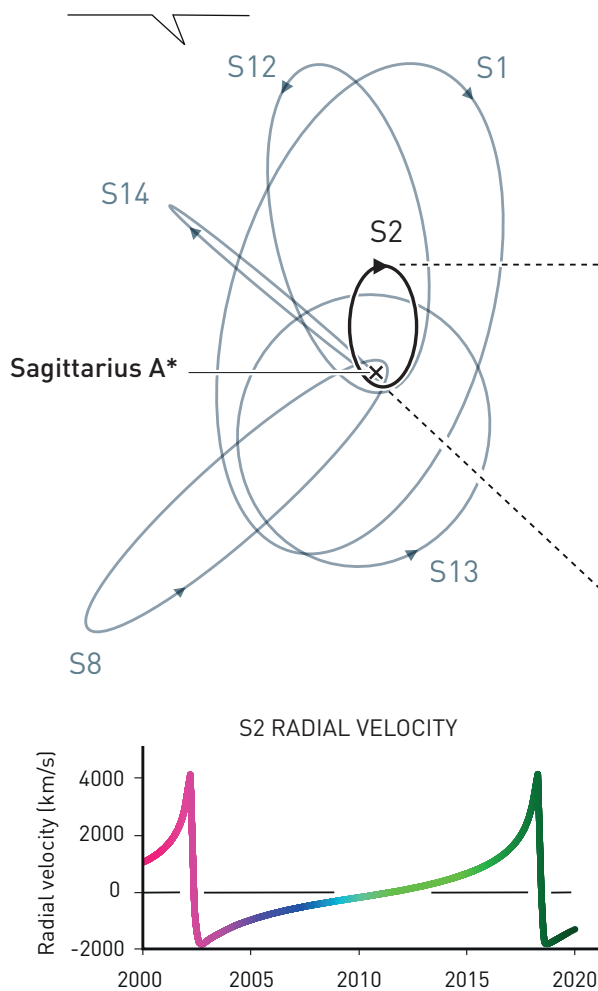


The light cone shows the paths of the light rays forward and backward in time. When matter collapses and forms a black hole, the light cones that cross the black hole's event horizon will turn inward, toward the singularity. An outside observer will never really see the light rays reach the event horizon, they just nudge it. No one can see further in.

Stars closest to the centre of the Milky Way

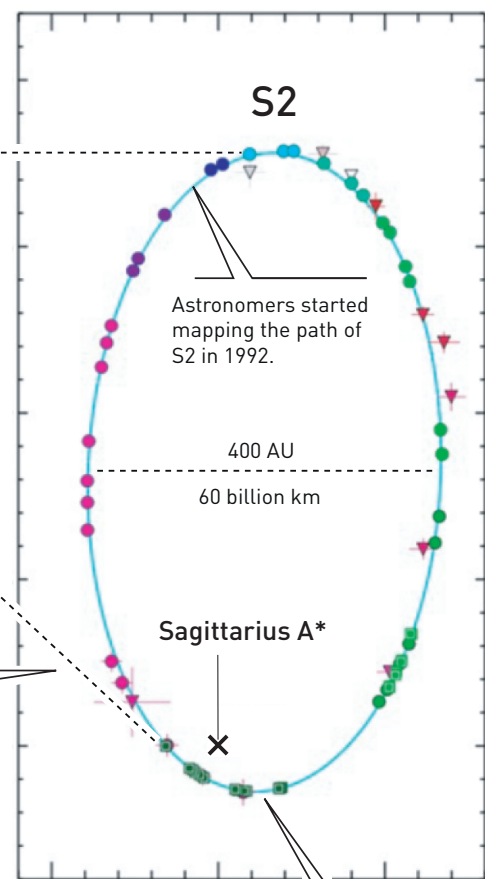
The stars' orbits are the most convincing evidence yet that a supermassive black hole is hiding in Sagittarius A*. This black hole is estimated to weigh about 4 million solar masses, squeezed into a region no bigger than our solar system.

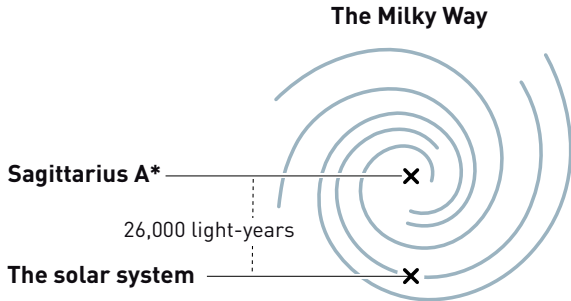
Some of the measured orbits of stars close to Sagittarius A* at the centre of the Milky Way.



The S2 star's radial velocity increases as it approaches Sagittarius A* and decreases as it moves away along its elliptical orbit. Radial velocity is the component of the star's velocity that is in our line of sight.

Astronomers were able to map an entire orbit of less than 16 years for one of the stars, S2 (or S-02). The closest it came to Sagittarius A* was about 17 light hours (more than 1000 million kilometres).





The Milky Way, our galaxy, seen from above. It is shaped like a flat disc about 100,000 light-years across. Its spiral arms are made of gas and dust and a few hundred billion stars. One of these stars is our Sun.