

Key points from Lecture 18 of ASTR 350

1. Our Galactic center has a $\sim 4 \times 10^6 M_{\odot}$ black hole!
2. We know this because we are close enough to our Galactic center that we can watch individual stars orbit the supermassive black hole. We need to do this viewing in infrared, because optical light is strongly absorbed by the gas and dust along the way.
3. Even before the clear measurement of the mass, it was long suspected based on other properties (especially radio emission) that our Galactic center harbors a massive black hole.
4. Detailed measurements of the orbits have led to information about the stars in our Galactic center, and resulted in the 2020 Nobel Prize in physics being shared by the leaders of the two main groups to study this motion.
5. By now, measurements are precise enough to detect the effects of both special and general relativity.
6. Light echoes indicate that our Galactic center was much more active just a few hundred years ago, and may have been a full-blown AGN millions of years ago. But now, the total luminosity is typically just that of the Sun...