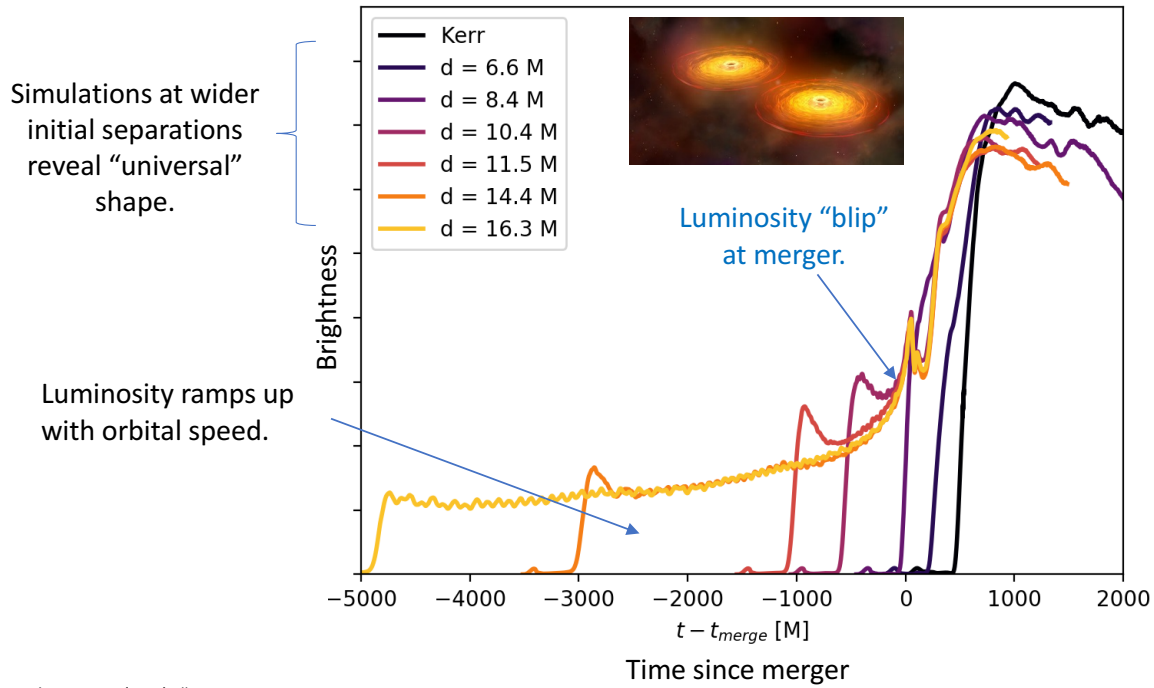
What Can We See When Black Holes Collide?

What is the science question? We know that distant galaxies with supermassive black holes merge, and that their central giant black holes (100 million times the mass of the sun) must merge as well. *Do these merging supermassive black holes cause the surrounding material to glow in a way that we could observe it?*

What were your findings? Orbiting black holes build up surrounding magnetic fields to a fixed level; it grows as the merger proceeds, generating a source of energy for the surrounding material to glow.

What was the impact? We better understand possible light signals characteristic of the massive black hole merger that could be emitted concurrent with gravitational waves.

Why does it matter to non-scientists? We are beginning to understand if we can see the most powerful events in the universe—merging supermassive black holes—with telescopes.



Bernard Kelly (663), John Baker (663), Zach Etienne (WVU), Bruno Giacomazzo (U. Trento), Jeremy Schnittman (663): "Prompt Electromagnetic Transients from Binary Black Hole Mergers," Phys. Rev. D **96**:123003 (2017)