

# Movement of black holes powers the universe's brightest lights

July 20 2011

---

Whether on their own or orbiting as a pair, black holes don't typically sit still.

Not only do they spin, they can also move laterally across their [host galaxy](#). And according to astrophysicists at Brigham Young University, both types of movement power massive jets of [energy](#) known as quasars.

The study, which appears in the current issue of [Proceedings of the National Academy of Sciences](#), is the first to compute what may fuel some of the brightest persistent lights in the universe.

These spectacular jets stream out of galaxies that contain discs of debris and gas, the remnants of stars ripped apart by the force from [black holes](#).

"The black hole is like a generator spinning around in these magnetic fields," said BYU professor David Neilsen, lead author of the study. "The way the field lines get twisted around and pulled by the spinning black hole creates electromagnetic tension that gets turned into radiation and energy that goes out."

One black hole in the galaxy Centauras A propels radiation in a jet measuring 1 million light-years long.

The spin of black holes has been believed to play a role since the idea was put forward in 1977. The new study confirms this theory while also introducing a totally new component: that a black hole's lateral

movement also powers these jets.

"Rotational [kinetic energy](#) contributes, but the simple movement like a billiard ball can also contribute to this," said BYU professor Eric Hirschmann, a co-author of the study. "The two processes don't compete with each other, they combine with each other to give you the overall energy that streams away from the black hole."

In other words, the biggest and brightest [quasars](#) could come from black holes that both spin fast and traverse their host galaxy at high speeds.

Provided by Brigham Young University

Citation: Movement of black holes powers the universe's brightest lights (2011, July 20) retrieved 25 April 2024 from <https://phys.org/news/2011-07-movement-black-holes-powers-universe.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--