Suzaku in the (US) News

Ilana Harrus (Suzaku GOF)

Challenges

XRS problems reduced the amount of exposure in the press anticipated before launch.

Still respectable press presence using the remaining two main instruments (different science to advertise, larger Japanese role,...)

Press Releases

1) Launch date announcement (June 2005) -- HQ release
2) Launch (July 2005) -- HQ release
3) XRS problems (August 2006) -- HQ release
4) First light XIS (August 31, 2006) -- GSFC release
5) Comet 73P/Schwassmann-Wachmann 3 (May 12, 2006) -- GSFC release
6) AAS meeting (June 2006) -- GSFC release
7) HEAD meeting (Oct 2006) -- GSFC release

Coverage

1) Launch: Covered by the usual suspects (and some). In total about 110 articles from all over the world. In the US: Washington Post, USA Today, LA Times, all science-related web-sites, blogs, ..
2) XRS problem was covered as well (Science web sites, Science, and general press: CNN,..)
3) First light XIS (covered with about 2 months delay ...)

Coverage

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Just one look: Astrophysicists seek view of black holes

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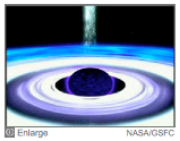
Science Snapshot
Dan Vergano



Enlarge NASA/GSFC

Supermassive black holes are a prime target for Japan's Suzaku X-ray satellite. These are voids in the center of most galaxies containing the mass of millions to billions of suns, all confined within a region about the size of our solar system.

LEARN MORE

NASA: Scientists Nudge Closer to the Edge of a Black Hole (with animation)

NASA: NASA Performs Headcount of Local Black Holes

Chandra X-ray observatory: Chandra Reviews Black Hole Musical: Epic But Off-Key

In *Through the Looking Glass*, Alice was told to "believe as many as six impossible things before breakfast," but many astrophysicists would like to see just one: a view of a light-destroying black hole.

And they are getting closer.

Now, NASA even calls the drive to "image" a black hole a long-term goal for its space exploration. Astronomers provided an update of the chase at the High Energy Astrophysics Division of the American Astronomical Society meeting last week in San Francisco.

When anything falls down the gravitational rabbit hole of a black hole, a collapsed star with gravity so strong that even light can't escape its pull, nothing returns. But, the high temperature debris-accumulating "accretion" disks circling many of them emit radiation, a phenomenon well illustrated by results from Japan's Suzaku X-ray satellite.

On Thursday, NASA and international scientists such as Andrew Fabian of England's Cambridge University, announced the satellite has captured the closest thing to a black hole image yet. Looking at X-rays given off by the accretion disk around nearby super-sized black holes, they could describe the black hole's tilt and spin speed.

Found at the center of most galaxies, such central black holes are millions to billions of times heavier than the sun.

"We are entering the era of precision black hole measurements," said Fabian, in a NASA statement from the meeting. Piling together X-ray images from the nearby galaxies MCG-6-30-15 and MCG-5-23-16, the researchers hope to eventually piece together an X-ray silhouette of a black hole.

On another track, a scientific team using NASA's Swift satellite presented a survey of the galaxies within 400 million light years (one light year is about 5.9 trillion miles). of our own Milky Way galaxy, reporting that about 200 of them contain "active" central black holes. That's a polite way of saying they are messily devouring vast swaths of stars and gas inside their galaxy. Scientists suggest such black hole banqueting ironically enough triggers a burst of new star formation in galaxies.

Another meeting report gives a sense of the power of these black hole binges. Relying on NASA's Chandra X-ray

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MEETINGBRIEFS>>

AAS HIGH ENERGY ASTROPHYSICS DIVISION | 4–7 OCTOBER 2006 | SAN FRANCISCO, CALIFORNIA

Snapshots From The Meeting >>

Galactic jet fuel. In most galaxies, including our Milky Way, a supermassive black hole sits quietly at the core. But in a small subset of galaxies, the nucleus is "active," spewing energetic radiation. And in a still-smaller subset, some of the energy shoots into space in the form of bright beams known as jets.

For years, astronomers have wondered about what the jets are made of. Now there is an answer, based on two active galactic nuclei observed by NASA's Swift satellite.

Jets are known to contain electrons but are electrically neutral, so some positively charged particles—either protons or positrons—are needed to balance the electrons' negative charge. At the meeting, Rita Sambruna of NASA's Goddard Space Flight Center in Greenbelt, Maryland, reported that Swift measurements of x-rays produced in the jets indicate that they contain protons. The total amount of matter in a jet at any given time, Sambruna says, is about equivalent to the mass of Jupiter.

Black-hole dervish. The Japanese x-ray satellite Suzaku has pinned down the spin of a massive black hole in the core of galaxy MCG-6-30-15. Previous observations hinted that the black hole is spinning rapidly. Suzaku has verified those suspicions with precise measurements of x-rays emitted by hot gas near the black hole, Andrew Fabian of the University of Cambridge, U.K., reported at the meeting. The spinning rate is on the order of one rotation every 5 minutes, Fabian says, about 90% of the physically possible maximum.

Chris Reynolds, an astrophysicist at the University of Maryland, College Park, who was not involved in the research, says the finding is significant for confirming that some black holes spin so rapidly. As much as 30% of a black hole's energy can be stored in its rotational motion, Reynolds said, suggesting that the spin may contribute to the energy output of quasars, cosmic lighthouses believed to be powered by black holes at the core of active galaxies. –T.S.

4) HEAD meeting

"Science", "Sky and Telescope", "New Scientist" -- Either in attendance or calling in remotely (Webcast Press conference system).

Future plans

1) Involvement on Suzaku from our new science writer (Bob Naeye)

2) Ask for contributions directly from the PIs following the Chandra model.