



***Mini-Jet Found Near  
Milky Way's Black Hole***

1  
00:00:06,230 --> 00:00:03,429  
our milky way central black hole has a

2  
00:00:08,470 --> 00:00:06,240  
leak this supermassive black hole over

3  
00:00:09,270 --> 00:00:08,480  
four million times more massive than our

4  
00:00:11,110 --> 00:00:09,280  
sun

5  
00:00:13,430 --> 00:00:11,120  
looks like it still has the remnants of

6  
00:00:15,910 --> 00:00:13,440  
a blow torch like jet dating back

7  
00:00:17,830 --> 00:00:15,920  
several thousand years nasa's hubble

8  
00:00:20,550 --> 00:00:17,840  
space telescope hasn't photographed the

9  
00:00:22,710 --> 00:00:20,560  
phantom jet yet but it has helped find

10  
00:00:24,870 --> 00:00:22,720  
circumstantial evidence that the jet is

11  
00:00:26,470 --> 00:00:24,880  
still pushing feebly into a huge

12  
00:00:28,310 --> 00:00:26,480  
hydrogen cloud

13  
00:00:30,630 --> 00:00:28,320

this is further evidence that the black

14

00:00:33,030 --> 00:00:30,640

hole is not a sleeping monster but

15

00:00:35,110 --> 00:00:33,040

periodically hiccups as stars and gas

16

00:00:37,110 --> 00:00:35,120

clouds fall into it

17

00:00:39,270 --> 00:00:37,120

the hiccup results in superheated

18

00:00:42,470 --> 00:00:39,280

material blasting away from the black

19

00:00:44,470 --> 00:00:42,480

hole as narrow beams or jets shooting in

20

00:00:47,590 --> 00:00:44,480

the same direction as the black hole's

21

00:00:49,190 --> 00:00:47,600

spin axis along with a flood of ionizing

22

00:00:51,990 --> 00:00:49,200

radiation

23

00:00:54,549 --> 00:00:52,000

as the jet blows through the gas it hits

24

00:00:56,950 --> 00:00:54,559

material which creates a series of

25

00:00:59,430 --> 00:00:56,960

expanding bubbles that extend out to at

26

00:01:01,590 --> 00:00:59,440

least 500 light years

27

00:01:04,229 --> 00:01:01,600

the streams continued to percolate out

28

00:01:06,789 --> 00:01:04,239

of the milky way's dense gas disc into

29

00:01:09,109 --> 00:01:06,799

the galactic halo

30

00:01:11,590 --> 00:01:09,119

scientists concluded that the black hole

31

00:01:15,270 --> 00:01:11,600

clearly surged in brightness as much as

32

00:01:17,190 --> 00:01:15,280

1 million fold in the last million years

33

00:01:19,270 --> 00:01:17,200

that would be enough for a jet to punch

34

00:01:20,630 --> 00:01:19,280

into the halo of material that surrounds

35

00:01:24,710 --> 00:01:20,640

the galaxy

36

00:01:28,710 --> 00:01:24,720

this hubble image of galaxy ngc 1068

37

00:01:33,030 --> 00:01:30,789

previous observations by hubble and

38

00:01:35,350 --> 00:01:33,040

other telescopes found evidence that the

39

00:01:37,590 --> 00:01:35,360

milky way's black hole had an outburst

40

00:01:39,429 --> 00:01:37,600

about two to four million years ago that

41

00:01:41,590 --> 00:01:39,439

was energetic enough to create an

42

00:01:44,389 --> 00:01:41,600

immense pair of bubbles towering above

43

00:01:46,630 --> 00:01:44,399

our galaxy that glow in gamma rays

44

00:01:48,310 --> 00:01:46,640

hubble was used to see how fast the

45

00:01:49,590 --> 00:01:48,320

bubbles were expanding and what they

46

00:01:51,749 --> 00:01:49,600

were made of

47

00:01:53,910 --> 00:01:51,759

hubble later found that the burst was so

48

00:01:56,870 --> 00:01:53,920

powerful that it lit up a gaseous

49

00:01:59,270 --> 00:01:56,880

structure as far away as 200 000 light

50

00:02:01,429 --> 00:01:59,280

years from the galactic center

51  
00:02:04,149 --> 00:02:01,439  
called the magellanic stream seen here

52  
00:02:06,310 --> 00:02:04,159  
in pink this gas is still glowing from

53  
00:02:08,710 --> 00:02:06,320  
that event even today

54  
00:02:10,550 --> 00:02:08,720  
the residual jet feature is close enough

55  
00:02:12,949 --> 00:02:10,560  
to the black hole that it would become

56  
00:02:15,190 --> 00:02:12,959  
much more prominent only a few decades

57  
00:02:16,150 --> 00:02:15,200  
after the milky way's black hole powers

58  
00:02:17,910 --> 00:02:16,160  
up again

59  
00:02:19,910 --> 00:02:17,920  
whenever that does actually end up