
Episode 3

1
00:00:00,000 --> 00:00:04,416
■
NARRATOR: Now, while a lot of smaller black holes enjoy spending time by themselves,

2
00:00:04,416 --> 00:00:06,833
others can be a bit more ... social!

3
00:00:06,833 --> 00:00:11,333
To be specific, black holes often love to dance
with other objects in the universe.

4
00:00:11,333 --> 00:00:16,333
Sometimes, the dance begins with two stars,
long before the black hole is even part of the picture.

5
00:00:16,333 --> 00:00:19,583
Then, one day, one of the two stars goes supernova, and …

6
00:00:19,583 --> 00:00:22,916
pop! The dance continues, but with a new partner.

7
00:00:22,916 --> 00:00:25,833
Other times, when another massive object – like a star –

8
00:00:25,833 --> 00:00:30,583
happens to pass by a black hole, it,
and the black hole, can't help but dance together!

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00:00:30,583 --> 00:00:35,416
In either case, the black hole could even pull stuff off of
its new friend to make a fancy accretion disk.

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00:00:35,416 --> 00:00:37,000
Look at it go!

11
00:00:37,000 --> 00:00:39,750
And while these first two black holes have been paired up with stars,

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00:00:39,750 --> 00:00:43,500
there are a quite a few other potential dance partners out there in the universe.

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00:00:43,500 --> 00:00:49,750
Smaller black holes have a great time dancing with low-mass stars, high-mass stars,
white dwarfs, neutron stars,

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00:00:49,750 --> 00:00:51,333
unicorns … wait, what?

15
00:00:51,333 --> 00:00:52,666
[record scratch, music stops]

16
00:00:52,666 --> 00:00:54,833
NARRATOR: Off you go, then! Shoo!

17
00:00:54,833 --> 00:00:56,250
[unicorn whinnies and flies off]

18
00:00:56,250 --> 00:01:01,750
NARRATOR: Ahem. Anyway, they can also dance with other black holes,
including really, really big ones.

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00:01:01,750 --> 00:01:06,250
And sometimes, when they're dancing with a giant star,
that giant star can go supernova,

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00:01:06,250 --> 00:01:11,416
eventually producing another neutron star, or ...
voila! A second black hole!

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00:01:11,416 --> 00:01:15,000
And, if either of those two get a bit too close to the other black hole ...

22
00:01:15,000 --> 00:01:18,250
You could get a new, larger, single black hole!

23
00:01:18,250 --> 00:01:24,166
By the way, did you hear that? When two black holes collide,

they also produce a ton of energy as ripples in space-time,

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00:01:24,166 --> 00:01:29,416
and, if we have the right tools, we can actually listen to them! Amazing.

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00:01:29,416 --> 00:01:34,666
Well, there you have it! Now grab your telescopes,
get out there, and dance the night away!