



1  
00:00:08,950 --> 00:00:06,789  
using nasa's spitzer space telescope

2  
00:00:10,470 --> 00:00:08,960  
we've looked at many nearby stars to

3  
00:00:13,589 --> 00:00:10,480  
look for orbiting

4  
00:00:15,509 --> 00:00:13,599  
dust and asteroids and comets orbiting

5  
00:00:17,430 --> 00:00:15,519  
debris left over from the process of

6  
00:00:19,189 --> 00:00:17,440  
planet formation

7  
00:00:21,349 --> 00:00:19,199  
we saw something very unusual that we

8  
00:00:25,509 --> 00:00:21,359  
hadn't seen around any other star

9  
00:00:27,429 --> 00:00:25,519  
we saw evidence for a massive collision

10  
00:00:30,630 --> 00:00:27,439  
when the two objects collide

11  
00:00:32,790 --> 00:00:30,640  
everything happens very quickly in the

12  
00:00:34,389 --> 00:00:32,800  
animation things have been slowed down

13  
00:00:36,790 --> 00:00:34,399

to allow you to see

14

00:00:39,270 --> 00:00:36,800

the impacting shock wave propagate

15

00:00:41,990 --> 00:00:39,280

across the surface of this devastated

16

00:00:45,670 --> 00:00:43,670

starting from the point of impact and

17

00:00:48,150 --> 00:00:45,680

circulating to the backside

18

00:00:50,709 --> 00:00:48,160

causing waves on the surface

19

00:00:52,470 --> 00:00:50,719

the entire planet becomes molten

20

00:00:54,790 --> 00:00:52,480

meanwhile tremendous amounts of material

21

00:00:56,869 --> 00:00:54,800

are ejected from the planet both outside

22

00:00:58,709 --> 00:00:56,879

of the system and some falls back onto

23

00:01:00,869 --> 00:00:58,719

the system itself depending on the

24

00:01:02,950 --> 00:01:00,879

details of the collision whether it's a

25

00:01:05,509 --> 00:01:02,960

high impact or depending on the angle

26

00:01:07,510 --> 00:01:05,519

that the objects hit each other at

27

00:01:10,149 --> 00:01:07,520

the there may be a growth or there may

28

00:01:11,590 --> 00:01:10,159

be a grinding away so sometimes the

29

00:01:13,750 --> 00:01:11,600

planet actually ends up smaller after

30

00:01:16,149 --> 00:01:13,760

the collision but generally the planet

31

00:01:17,910 --> 00:01:16,159

grows to larger and larger until there's

32

00:01:21,030 --> 00:01:17,920

no more material left in the system for

33

00:01:26,149 --> 00:01:23,830

while collisions like this are rare we

34

00:01:27,910 --> 00:01:26,159

don't see this large event in any other

35

00:01:29,590 --> 00:01:27,920

systems we've looked at with the spitzer

36

00:01:31,670 --> 00:01:29,600

space telescope

37

00:01:33,670 --> 00:01:31,680

collisions like this have happened in

38

00:01:35,590 --> 00:01:33,680

our own solar system so there was a

39

00:01:38,230 --> 00:01:35,600

large collision that formed our own moon

40

00:01:53,190 --> 00:01:38,240

early on as our planets formed similarly