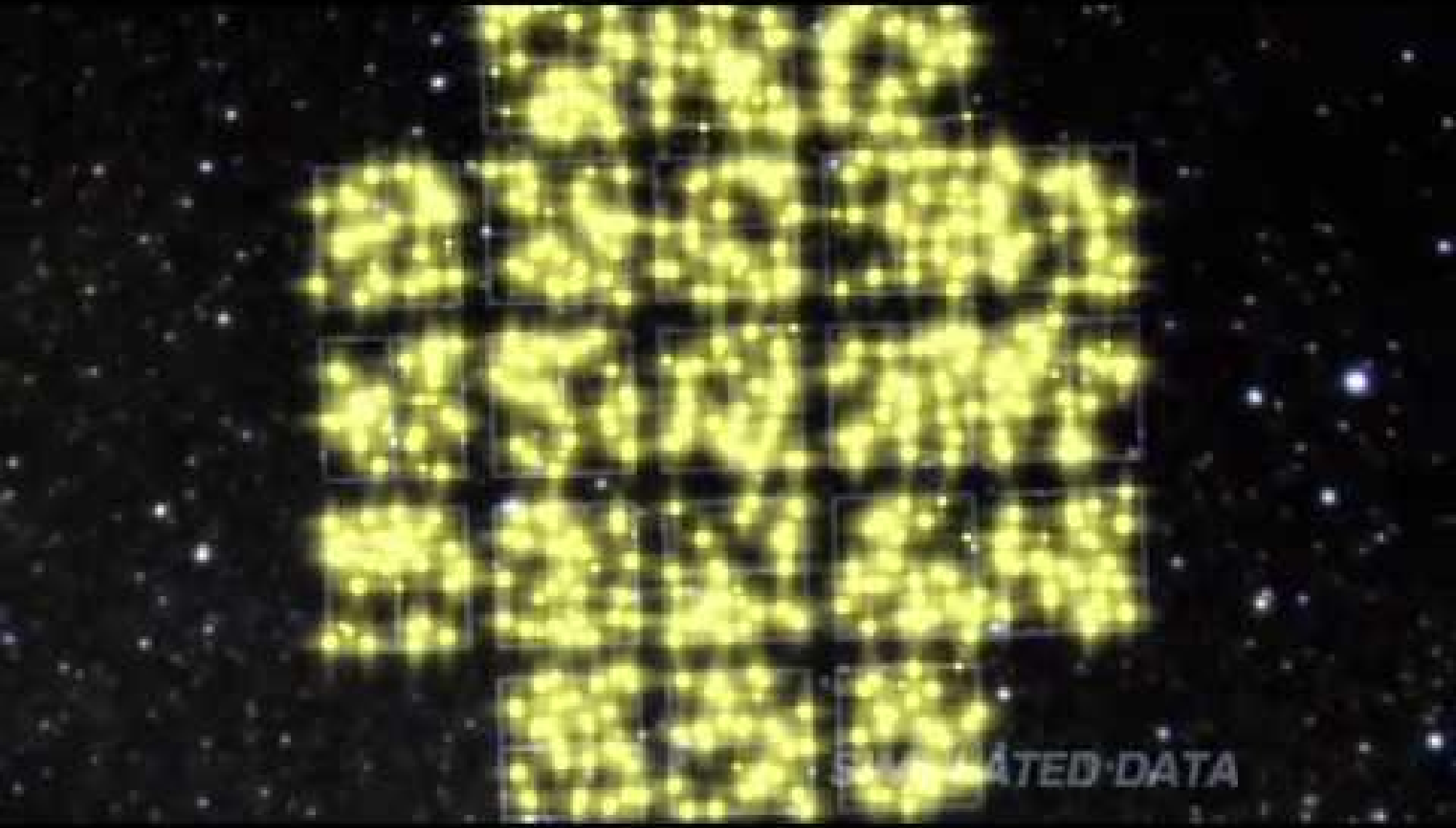
ATED·DATA

1
00:00:05,349 --> 00:00:04,309
four

2
00:00:08,950 --> 00:00:05,359
three

3
00:00:11,669 --> 00:00:08,960
two engine start one zero and liftoff of

4
00:00:13,990 --> 00:00:11,679
the delta ii rocket with kepler

5
00:00:16,550 --> 00:00:14,000
nasa's kepler mission has discovered the

6
00:00:19,029 --> 00:00:16,560
first confirmed planetary system with

7
00:00:20,070 --> 00:00:19,039
more than one planet transiting the same

8
00:00:21,910 --> 00:00:20,080
star

9
00:00:25,109 --> 00:00:21,920
the announcement of the discovery of the

10
00:00:27,830 --> 00:00:25,119
two planets kepler-9b and 9c

11
00:00:30,950 --> 00:00:27,840
is based on seven months of observations

12
00:00:33,430 --> 00:00:30,960
of more than 156 000 stars being

13
00:00:35,510 --> 00:00:33,440

monitored for subtle brightness changes

14
00:00:37,750 --> 00:00:35,520
as part of an ongoing search for

15
00:00:38,790 --> 00:00:37,760
earth-sized planets outside our solar

16
00:00:41,430 --> 00:00:38,800
system

17
00:00:54,950 --> 00:00:41,440
scientists designated the sun-like star

18
00:01:01,189 --> 00:00:58,229
kepler has found about 700 candidate

19
00:01:03,110 --> 00:01:01,199
planets several of these appear to be

20
00:01:05,750 --> 00:01:03,120
stars we have multiple planets going

21
00:01:07,670 --> 00:01:05,760
around them but we're announcing today

22
00:01:10,149 --> 00:01:07,680
our first discovery of

23
00:01:12,230 --> 00:01:10,159
a prove a proven pair of planets

24
00:01:14,390 --> 00:01:12,240
orbiting a single star we know their

25
00:01:17,030 --> 00:01:14,400
orbital periods we know their sizes and

26
00:01:19,910 --> 00:01:17,040
we know uh their masses

27
00:01:21,190 --> 00:01:19,920
the planets are the size about saturn so

28
00:01:23,510 --> 00:01:21,200
they're quite a bit bigger than earth

29
00:01:26,550 --> 00:01:23,520
maybe about uh three times or four times

30
00:01:29,190 --> 00:01:26,560
larger than the earth and these planets

31
00:01:31,910 --> 00:01:29,200
are hot and they have orbital periods of

32
00:01:34,390 --> 00:01:31,920
19 days and 38 days well inside the

33
00:01:36,230 --> 00:01:34,400
orbit of earth or mercury in fact so

34
00:01:37,590 --> 00:01:36,240
they're very hot and they're certainly

35
00:01:39,910 --> 00:01:37,600
gas planets

36
00:01:41,910 --> 00:01:39,920
the transit timing method works by

37
00:01:43,910 --> 00:01:41,920
having the timing of the planet when it

38
00:01:45,670 --> 00:01:43,920

goes in front of the star the star dims

39
00:01:47,910 --> 00:01:45,680
so we measure that time and we measure

40
00:01:50,230 --> 00:01:47,920
what happens again that's the orbital

41
00:01:52,310 --> 00:01:50,240
period if that varies a little bit that

42
00:01:54,469 --> 00:01:52,320
tells us about the planets that are

43
00:01:56,149 --> 00:01:54,479
orbiting that star the discovery is

44
00:01:58,069 --> 00:01:56,159
especially important because this

45
00:01:59,990 --> 00:01:58,079
transit timing method

46
00:02:01,990 --> 00:02:00,000
allows us to confirm even smaller

47
00:02:04,709 --> 00:02:02,000
planets exist we ought to be able to

48
00:02:07,030 --> 00:02:04,719
confirm even earth-sized planets exist

49
00:02:08,550 --> 00:02:07,040
so that's extremely important

50
00:02:10,229 --> 00:02:08,560
t-minus ten

51
00:02:11,350 --> 00:02:10,239
nine eight

52
00:02:12,390 --> 00:02:11,360
seven

53
00:02:13,510 --> 00:02:12,400
six

54
00:02:14,470 --> 00:02:13,520
five

55
00:02:15,589 --> 00:02:14,480
four

56
00:02:19,110 --> 00:02:15,599
three

57
00:02:21,910 --> 00:02:19,120
two engine start one zero and liftoff of

58
00:02:24,390 --> 00:02:21,920
the delta ii rocket with kepler on a

59
00:02:26,390 --> 00:02:24,400
search for planets in some way like our

60
00:02:27,270 --> 00:02:26,400
own air engine chamber pressures are