

R.ÖMAN



*SIMULATED
WIDE FIELD IMAGE*

1
00:00:05,749 --> 00:00:03,830

[Music]

2
00:00:07,430 --> 00:00:05,759

when it opens its eyes to our universe

3
00:00:09,910 --> 00:00:07,440

in the mid-2020s

4
00:00:12,310 --> 00:00:09,920

the nancy grace roman space telescope

5
00:00:14,709 --> 00:00:12,320

will capture images unlike any satellite

6
00:00:16,230 --> 00:00:14,719

before it

7
00:00:18,470 --> 00:00:16,240

the roman space telescope will have the

8
00:00:21,990 --> 00:00:18,480

same image resolution as hubble but will

9
00:00:23,750 --> 00:00:22,000

cover an area 100 times larger

10
00:00:25,349 --> 00:00:23,760

roman will also view the sky in

11
00:00:26,710 --> 00:00:25,359

carefully selected wavelengths of

12
00:00:28,310 --> 00:00:26,720

infrared light

13
00:00:31,429 --> 00:00:28,320

which will allow it to see through

14

00:00:33,350 --> 00:00:31,439

obscuring dust to reveal hidden stars

15

00:00:36,790 --> 00:00:33,360

and watch the growth of galaxies over

16

00:00:38,389 --> 00:00:36,800

the last 10 billion years

17

00:00:39,350 --> 00:00:38,399

to see what the sky will look like to

18

00:00:41,110 --> 00:00:39,360

roman

19

00:00:45,029 --> 00:00:41,120

scientists use special processing

20

00:00:47,110 --> 00:00:45,039

techniques to create simulated images

21

00:00:49,510 --> 00:00:47,120

in this case they began with a hubble

22

00:00:51,910 --> 00:00:49,520

mosaic of andromeda one of the closest

23

00:00:53,910 --> 00:00:51,920

galaxies to our own

24

00:00:56,470 --> 00:00:53,920

released in 2015

25

00:00:58,790 --> 00:00:56,480

this mosaic was created out of over 400

26
00:01:01,270 --> 00:00:58,800
individual hubble images and took more

27
00:01:03,349 --> 00:01:01,280
than three years

28
00:01:05,109 --> 00:01:03,359
because of its enormous coverage

29
00:01:07,429 --> 00:01:05,119
roman will be able to create a similar

30
00:01:10,870 --> 00:01:07,439
mosaic with just two images

31
00:01:12,789 --> 00:01:10,880
each taking only 90 minutes

32
00:01:15,510 --> 00:01:12,799
roman space telescope images are

33
00:01:17,590 --> 00:01:15,520
actually made of 18 separate panels each

34
00:01:19,990 --> 00:01:17,600
one corresponding to a single 16

35
00:01:21,910 --> 00:01:20,000
megapixel detector the arrangement of

36
00:01:25,109 --> 00:01:21,920
these detectors creates the distinctive

37
00:01:29,190 --> 00:01:27,109
the simulated image is not just special

38
00:01:30,950 --> 00:01:29,200

because of its size however

39

00:01:32,789 --> 00:01:30,960

it also shows andromeda as it will

40

00:01:35,030 --> 00:01:32,799

appear through roman's optics and

41

00:01:36,390 --> 00:01:35,040

infrared filters

42

00:01:38,230 --> 00:01:36,400

to achieve this

43

00:01:40,630 --> 00:01:38,240

scientists started with hubble filters

44

00:01:43,350 --> 00:01:40,640

that are closest to romans

45

00:01:45,190 --> 00:01:43,360

then they used software to measure the

46

00:01:47,270 --> 00:01:45,200

positions and brightnesses of the

47

00:01:49,749 --> 00:01:47,280

roughly 100 million stars in those

48

00:01:52,389 --> 00:01:49,759

images and applied those as input to

49

00:01:54,710 --> 00:01:52,399

roman image simulation software

50

00:01:56,709 --> 00:01:54,720

which added each star back to the image

51
00:02:01,190 --> 00:01:56,719
after applying the expected effects of

52
00:02:03,350 --> 00:02:01,200
the roman optics filters and detectors

53
00:02:05,030 --> 00:02:03,360
the resulting image reveals many stars

54
00:02:06,230 --> 00:02:05,040
that were blocked by dust in visible

55
00:02:09,430 --> 00:02:06,240
light

56
00:02:11,190 --> 00:02:09,440
telescope's role in providing a more

57
00:02:13,350 --> 00:02:11,200
comprehensive view of the stars in the

58
00:02:15,670 --> 00:02:13,360
local universe

59
00:02:17,510 --> 00:02:15,680
roman will also use its broad view to

60
00:02:19,430 --> 00:02:17,520
search for planets around other stars in

61
00:02:21,270 --> 00:02:19,440
our galaxy and to look for the

62
00:02:23,350 --> 00:02:21,280
fingerprint of dark matter and dark

63
00:02:25,030 --> 00:02:23,360

energy in the distant reaches of the

64

00:02:27,030 --> 00:02:25,040

universe

65

00:02:29,589 --> 00:02:27,040

with an unprecedented combination of

66

00:02:32,470 --> 00:02:29,599

breadth and depth the nancy grace roman