



1
00:00:00,800 --> 00:00:02,001
The Juno spacecraft
will encounter

2
00:00:02,034 --> 00:00:04,570
some of the most intense
radiation in the solar system.

3
00:00:04,603 --> 00:00:05,371
(trumpets)

4
00:00:05,404 --> 00:00:06,973
So how do we protect it?

5
00:00:07,073 --> 00:00:08,074
(clang)

6
00:00:08,174 --> 00:00:17,484
(■)

7
00:00:17,584 --> 00:00:20,253
Jupiter has a very
strong magnetic field,

8
00:00:20,286 --> 00:00:23,823
14 times stronger than the
Earth's magnetic field.

9
00:00:23,856 --> 00:00:25,992
It's as though if we
cut the planet in half,

10
00:00:26,025 --> 00:00:28,194
we'd find a giant magnet inside.

11
00:00:29,495 --> 00:00:31,030
Like this one.

12

00:00:31,063 --> 00:00:32,398
(bell rings)

13

00:00:32,431 --> 00:00:35,468
You see, here's the
magnetic-field pattern created

14

00:00:35,501 --> 00:00:37,437
by these little pieces of iron.

15

00:00:37,470 --> 00:00:39,572
But Jupiter doesn't
have a magnet inside.

16

00:00:39,605 --> 00:00:42,942
Instead, it probably has a core

17

00:00:42,975 --> 00:00:45,545
made of hydrogen, squeezed down

18

00:00:45,578 --> 00:00:48,748
to such high pressure
that it acts like a metal.

19

00:00:48,848 --> 00:00:50,784
And when it churns and
swirls, it produces this

20

00:00:50,884 --> 00:00:54,520
super-strong magnetic
field that draws particles

21

00:00:54,553 --> 00:00:56,856
from the sun at such
high speeds that they

22

00:00:56,889 --> 00:01:01,294
produce the radiation equivalent
of 100,000,000 X-rays.

23

00:01:01,394 --> 00:01:03,096

(zapping sound)

24

00:01:03,196 --> 00:01:06,065

Now that radiation would
destroy the electronics

25

00:01:06,098 --> 00:01:07,600

on board the Juno spacecraft.

26

00:01:07,633 --> 00:01:09,035

(zapping and explosion sounds)

27

00:01:09,068 --> 00:01:12,138

So what we do is we
enclose Juno's electronics

28

00:01:12,171 --> 00:01:14,373

in a metal vault
like this one,

29

00:01:14,406 --> 00:01:15,174

(banging on metal)

30

00:01:15,207 --> 00:01:17,477

so our electronics can survive.

31

00:01:17,510 --> 00:01:18,711

(cheering)

32

00:01:18,744 --> 00:01:21,814

Now the real vault on
board Juno doesn't look

33

00:01:21,847 --> 00:01:23,349

like a cookie tin.

34

00:01:23,382 --> 00:01:24,083

It looks more like this.

35

00:01:24,116 --> 00:01:25,284
(bell rings)

36

00:01:25,317 --> 00:01:29,088
And it's made of
titanium, like this.

37

00:01:29,121 --> 00:01:32,392
Very lightweight
and strong metal.