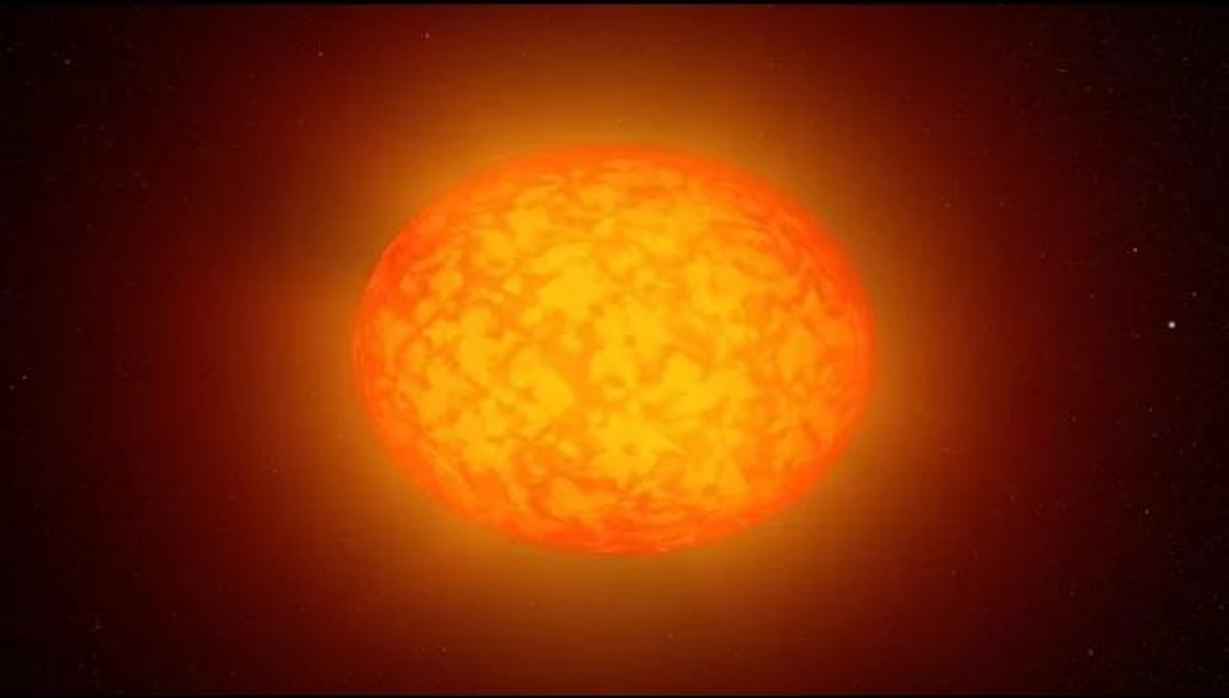

1
00:00:00,020 --> 00:00:04,060
[Music Throughout]

2
00:00:04,080 --> 00:00:08,110
This is not a cosmic jack-o-lantern

3
00:00:08,130 --> 00:00:12,160
It's an illustration of a rare type of star recently found by NASA's Kepler and Swift missions.

4
00:00:12,180 --> 00:00:16,230
The stars are spinning so fast they're flattened into pumpkin shapes,

5
00:00:16,250 --> 00:00:20,300
and have intense X-ray emissions.

6
00:00:20,320 --> 00:00:24,400
For four years, Kepler monitored a wide patch of the sky...

7
00:00:28,510 --> 00:00:32,630
... to look for brightness changes caused by exoplanets passing in front of their host stars.

8
00:00:32,650 --> 00:00:36,790
The Kepler field of view is one of the best-studied parts of the sky.

9
00:00:36,810 --> 00:00:40,990
So researchers used NASA's Swift to search for X-ray sources Kepler may also have seen in visible light.

10
00:00:41,010 --> 00:00:45,180
Some of the brightest ones ...

11
00:00:45,200 --> 00:00:49,250
... turn out to be rapidly spinning stars.

12
00:00:49,270 --> 00:00:53,310
The most extreme is called KSw 71.

13
00:00:53,330 --> 00:00:57,350

The sun rotates once every 25 days.

14
00:00:57,370 --> 00:01:01,440
KSw 71 is 10 times the sun's size and spins 4 times faster.

15
00:01:01,460 --> 00:01:05,530
It produces 4,000 times the sun's peak X-ray emission.

16
00:01:05,550 --> 00:01:09,650
Astronomers think it formed from a pair of sun-like stars in a close binary system.

17
00:01:13,810 --> 00:01:17,990
The stars orbited faster as they grew closer. Eventually they came into contact.

18
00:01:22,190 --> 00:01:26,220
Then they merged to form a rapidly spinning "pumpkin" star.

19
00:01:26,240 --> 00:01:30,270
The transition may take 100 million years, making it a relatively brief phase in the star's life.

20
00:01:34,360 --> 00:01:38,440
The Swift study found 93 X-ray objects. About half were active galaxies.

21
00:01:38,460 --> 00:01:42,540
The rest were various types of X-ray emitting stars.

22
00:01:42,560 --> 00:01:49,010
Swift is now studying additional fields imaged during Kepler's extended K2 mission.