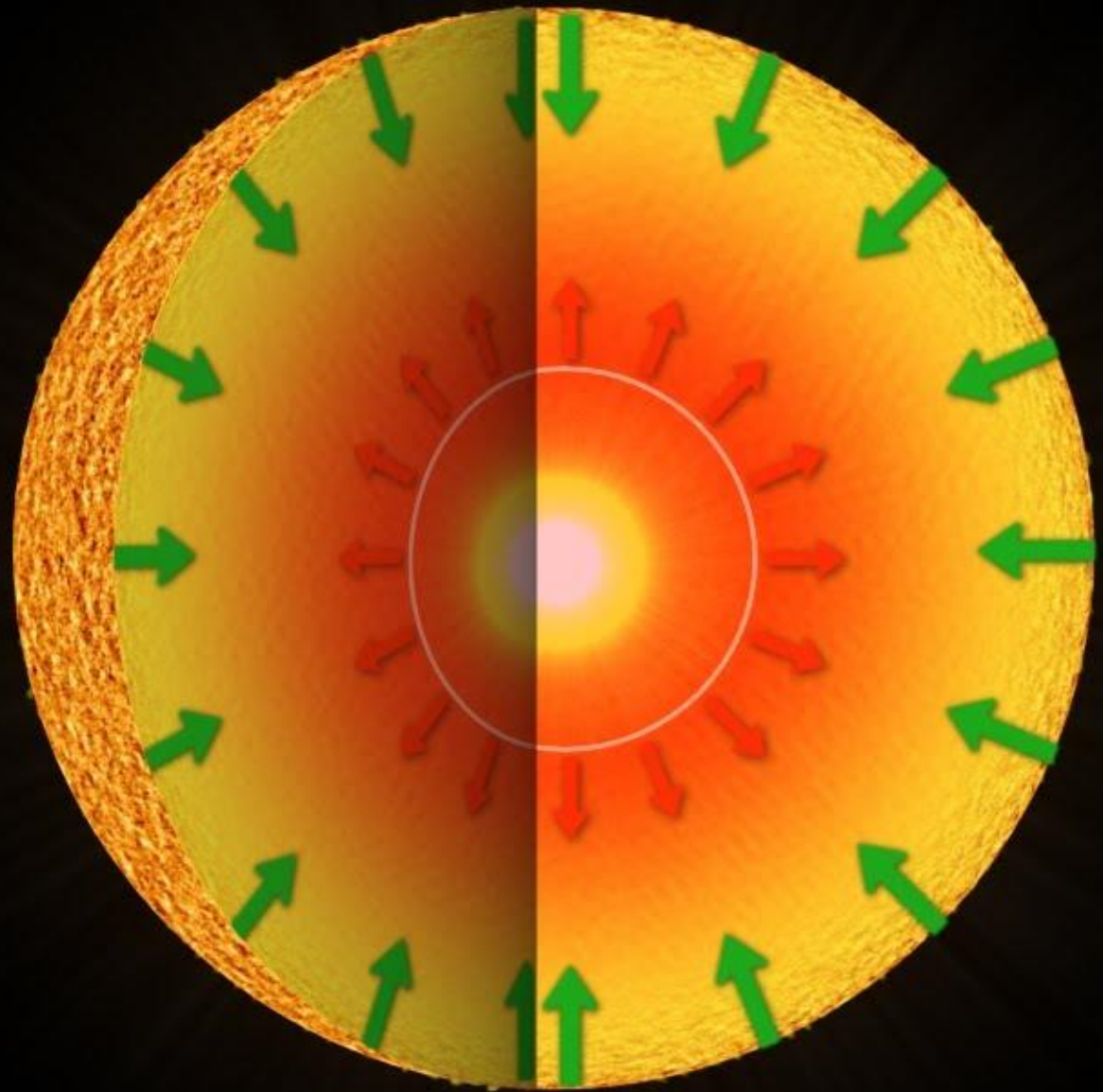

1
00:00:12,050 --> 00:00:04,010
Music

2
00:00:12,070 --> 00:00:16,080
This kinesthetic activity models the life of a

3
00:00:16,100 --> 00:00:20,080
small to medium size star, such as our sun. Each person

4
00:00:20,100 --> 00:00:24,100
involved in this activity represents a bit of the material that goes into making such a

5
00:00:24,120 --> 00:00:28,130
star. As the activity begins everyone is dancing or moving

6
00:00:28,150 --> 00:00:32,160
around freely--just bits of matter that are hanging out in some particular spot in space.

7
00:00:32,180 --> 00:00:36,190
As these bits of matter come close to one another they start clumping

8
00:00:36,210 --> 00:00:40,220
together more and more, due to gravity. After a while

9
00:00:40,240 --> 00:00:44,260
this matter is clumped tightly enough to form a star. In our activity

10
00:00:44,280 --> 00:00:48,300
the participants at the edges form a ring facing inward, as the outer shell of the

11
00:00:48,320 --> 00:00:52,330
star, with their hands raised to represent the inwardly directed force of gravity.

12
00:00:52,350 --> 00:00:56,360
The participants in the center face outward, representing the core

13
00:00:56,380 --> 00:01:00,390

of the star, with their hands also raised to represent the energy generated by the

14
00:01:00,410 --> 00:01:04,430
fusion of hydrogen at the center of the star. These two forces

15
00:01:04,450 --> 00:01:08,460
remain in balance for most of the stars life. We call this a main

16
00:01:08,480 --> 00:01:12,490
sequence star. Eventually the star runs out of hydrogen to

17
00:01:12,510 --> 00:01:16,510
fuse in the core. And the balance of gravity and energy from fusion is broken.

18
00:01:16,530 --> 00:01:20,530
When this happens gravity wins and the participants in the core

19
00:01:20,550 --> 00:01:24,550
of the star drop their hands and move slightly closer together. The participants in the

20
00:01:24,570 --> 00:01:28,590
shell never lower their hands as gravity is always in effect.

21
00:01:28,610 --> 00:01:32,620
The slight decrease in the size of the core makes it hot and dense enough to start fusing

22
00:01:32,640 --> 00:01:36,650
helium. The participants in the core raise their hands once more as energy

23
00:01:36,670 --> 00:01:40,700
is again being generated at the center of the star. Participants in the

24
00:01:40,720 --> 00:01:44,740
shell take a step outward to represent the surge in energy, making the star larger than

25
00:01:44,760 --> 00:01:48,760
it was during the main sequence phase. The star has become a red giant.

26
00:01:48,780 --> 00:01:52,780
Finally, the core of the star runs out of helium to

27
00:01:52,800 --> 00:01:56,800
fuse. When this happens, the participants in the core once again drop their

28
00:01:56,820 --> 00:02:00,840
hands and move slightly closer together. This time the decreasing core

29
00:02:00,860 --> 00:02:04,860
size only raises the temperature enough to allow one last burst of energy,

30
00:02:04,880 --> 00:02:08,890
and push from the core. This causes the shell to drift away into space

31
00:02:08,910 --> 00:02:12,910
while the participants in the core move even closer together.

32
00:02:12,930 --> 00:02:16,920
At this stage the participants in the center represent a white dwarf while the

33
00:02:16,940 --> 00:02:20,940
shell has drifted off to become a planetary nebula. Eventually the material

34
00:02:20,960 --> 00:02:24,970
that once formed the shell of the star will be available to be used in the formation

35
00:02:24,990 --> 00:02:29,000
of another star.