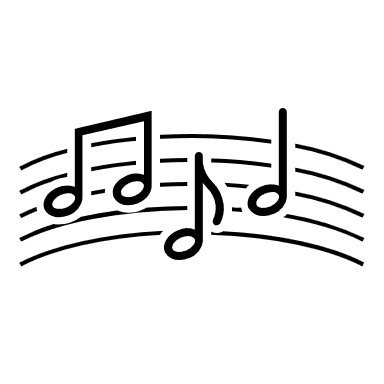
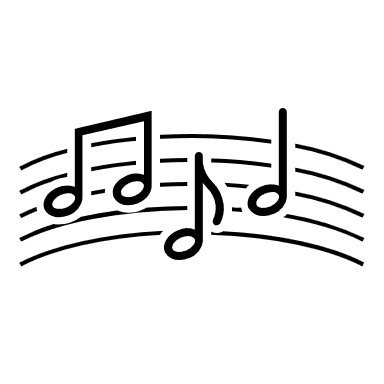
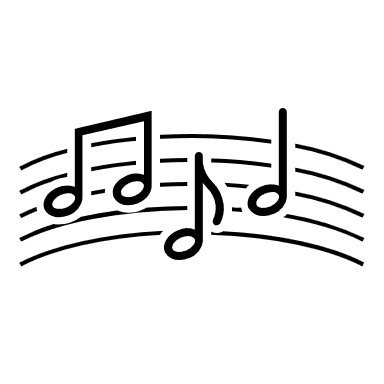
A graph paper with writing on it

Description automatically generated

  
1.  
\*Space odyssey intro song\*  
  
“First there was dust” \*silence\*  
2.  
\*Space odyssey intro song\*  
  
“…. and then …. there were stars”  
3.  
\*Space odyssey intro song\*

“This is the story about Blue Stragglers, mysterious stars that show behaviour different to all other stars in a cluster”  
4.  
“Let’s consider a Hertzsprung-Russel luminosity-color diagram of a cluster. The stars, all having the same age, can be seen sitting on a curve, called an isochrone. A lot of stars can be found on the straight part of the isochrone, the main sequence. We also see some stars turning off from the main sequence, those are red giants. And then, occasionally, we come across stars beyond the turning point, on an extension of the main sequence. They are the blue stragglers”  
5.  
“Who are these stars who seem to wonder off from their cluster members? Why do they appear there, on a place were you would not expect to see such hot, blue objects? “   
6.  
“To answer this question we need to understand star evolution”

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7.  
For the main part of its life, a star burns hydrogen to maintain a balance between the outward directed radiation pressure and the inward directed gravitional forces. During this period the star is stable in size, mass, luminosity and temperature. It sits comfortably for a long period on the main sequence.  
8.  
At the end of it’s life, when all fuel has been exhausted, the internal pressure from fusion will decrease, so gravity will start compressing the star, leading to the core heating up. Because of this, fusion will now start to take place in the outer layers.   
9.  
This will cause rapid expansion of the star.   
10.  
The expansion will lead to a higher luminosity and lower temperature. The star has turned into a red giant. As the cluster gets older, its isochrone will also change with more and more stars bending into the red giant area.  
11.  
Compared to smaller cooler stars, bigger hotter ones tend to live much shorter as they burn through their fuel supply faster. Big hot stars are therefore rare in older parts of space.  
12.  
Some older open clusters, like M44, however still contain such stars. It looks like they have been rejuvinated. These are our stragglers!

A close-up of a graph paper

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13.   
Current thinking is that at some point Blue Stragglers have acquired new energy, either through mass transfer from a binary companying star or through collision with another star.

14.

We investigated M44 with real data, acquired using the telescopes of the Anton Pannekoek Institute. Plotting our data in an HR diagram we were able to identify a Straggler, that is also reported in literature, just of the turning point of the isochrone.   
  
A paper with writing on it

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14.  
  
15.  
  
16.  
  
17.