

Physics Department

Orbits Program

Thomas Dean

Have you ever wondered how the universe was formed and how it progressed from there?

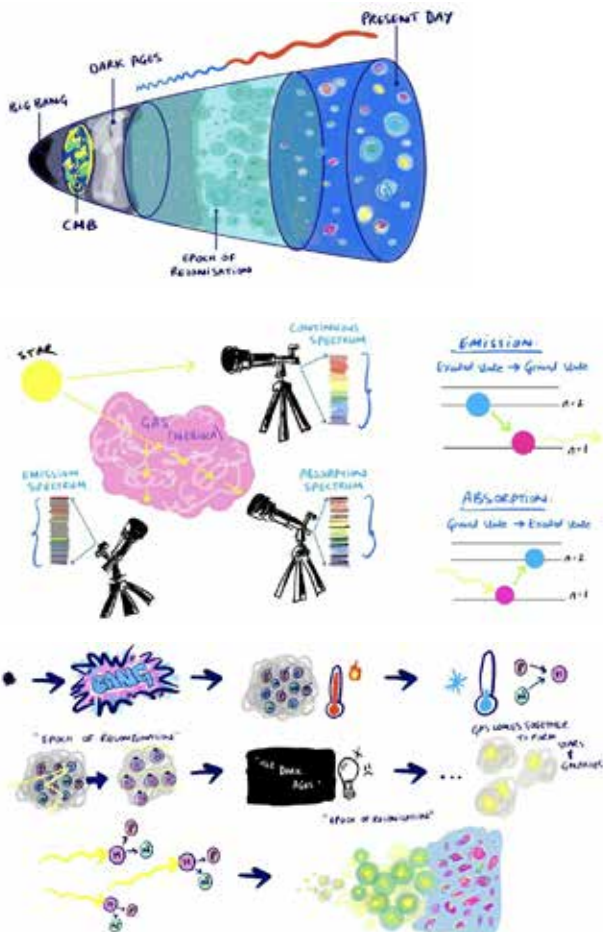
Over 10 weeks from February to June, Dylan Stewart and I participated in the Orbits program. This was a program from UCL, where school students were given the opportunity to help with research in Astrophysics by handling and processing real data. From the Art rooms on Wednesday afternoons, we used Python programs on Google Colab to analyse the spectra of mid-redshift galaxies ($z=2-5$, the Z parameter being a measure of redshift), looking at various spectral

lines such as Lyman-alpha, Carbon III and Helium II, in order to try and find out whether star-forming or active galaxies played a larger role in the epoch of reionization.

The epoch of reionization was a period in which the universe, having become de-ionised 300,000 years after the Big Bang, was re-ionised by light from the first stars, leading to the universe being almost completely ionised today. In the first half of the program we looked at a mix of galaxies, and in the second half we looked at galaxies of specific redshifts- me looking at galaxies with redshift over 4 and Dylan looking at galaxies with redshift

between 2 and 3, to try and compare and contrast the different spectral lines at different redshifts. We each analysed the spectra of around 20 galaxies and at the end I presented our findings to a virtual conference attended by faculty of UCL and answered questions about our findings, such as how the values were obtained and how AGN's and SFG's can be differentiated.

I would like to thank past pupil and program instructor Mark Cunningham as well as Mr. Stewart for organising and running the program.





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