Astronomy Talk 17th November 2020

The First Stars

This was a "Zoom" talk given by Dr Dan Whalen of the Portsmouth University Department of Cosmology and Gravitation.

One of the facts we need to explain is how supermassive black holes emerged so early in the universe, after a few hundred million years.

The first stars formed approximately 100 million years after the Big Bang. Dan showed how Dark Matter help material to coalesce more easily, aggregating matter into nodes where star formation could take place.

The stars were potentially much larger than any today, at around 1000 solar masses. These stars would have reinonised the universe and would also have split molecular hydrogen to make atomic hydrogen. Molecular hydrogen is a good cooling agent, which enables less massive stars to form. Without so much cooling, the matter then available to make stars could potentially make even more massive stars.

These stars could have had masses up to about 100,000 solar masses, and would eventually collapse to form black holes of that mass. These could have been the seeds for the late supermassive black holes.

This talk was attended by a number of guests from the Institute of Physics.