

Astronomy Talk 11th January 2020

The Formation of Stars and Planetary Systems

Claire Davies, a post-doc researcher at Exeter university, came to give us this talk. She started by defining what stars and planets are and covering the other constituents of the solar system.

We looked at the formation of stars, the spherical collapse of molecular clouds, and the formation of discs and jets, including how magnetic fields funnel material into the star. The residual disc then can go on to form planets – the so-called protoplanetary disc or proplyd. The disc lasts 1 to 10 million years, by which time any planets will have formed.

The evolution of the system does depend on the total mass, and proplyds in the Orion nebula were shown. Claire showed the processes and constituents of the disc, e.g. hydrogen and silicate grains, which may stick together to form larger objects.

Eventually runaway growth leads to planetesimals, which can hang onto light gases if massive enough.

Claire mentioned that if it's a very massive disc, planets can form like a star by collapse of a cloud, but this was not the case with the solar system.

We then moved on to Claire's current research, which is in systems where the rotation of the disc is not co-planar with the star. To get data on this needs resolution down to 10 micro arc-seconds, which needs interferometry even at optical wavelengths.

A fascinating talk, well attended and appreciated.