

## **Astronomy Talk 17<sup>th</sup> November 2018**

### **Short talks**

This talk was given by the chairman, James Fradgley, who was covering for Bill Coombes, who was unfortunately ill. The subject was 3 short unrelated talks.

The first talk was about the Maunder minimum and the so-called "Little Ice Age". The Maunder minimum is a period 70 years from about 1645 to 1715 when there were no sunspots observed. It transpires our views are not wholly correct, as the time was not particularly colder than periods around it. There was some discussion about the effect of solar cycles on temperature and in historical records.

The second talk was about using pulsars as GPS. Pulsars can emit very precise signals, and by choosing appropriate millisecond pulsars, one can in principle identify ones location relative to Earth anywhere in the galaxy. It may be useful for distant space probes, whose angular resolution is at best 4 km per AU (1/200 arc sec) with ground based methods, a potential error of 200 Km at Pluto's distance. The discussion also covered using pulsars for the detection of gravitational waves which is the subject of ongoing experiment and research.

The third talk covered the difference between the Oort cloud and the Kuiper belt. The Oort cloud is a very distant isotropic sphere of small bodies, some of which become comets if they are disturbed to fall into the inner solar system. The Kuiper belt is the outer remnant of the original dusty disc from which the solar system formed. Their origin was looked at, including the formation and migration of planets and their relevance to the topic in throwing small bodies about to where they are now.