

Astronomy Talk 25th January 2022

Crazy Interstellar Rockets

Dr Julian Onions gave us this fascinating talk. There were 107 attendees. First, he defined specific impulse and how various devices from gunpowder to ion rockets stack up.

The idea of atomic rockets arose in the 1950's and 60's, e.g. with the Nerva engine. They're far better than chemical rockets but do have a potential radioactive pollution problem. NASA decided to stick with chemical rockets.

One of the ideas that could be very worthwhile is the Project Orion rocket, but it involves nuclear explosions in the engine. The idea of nuclear bombs behind the craft were developed by Freeman Dyson in particular, but would be horrendously radioactive. Project Daedalus by the British Interplanetary Society involved nuclear fusion (DT fusion), but we don't have that yet. One of the best ideas is the Bussard Ramjet, which scoops up hydrogen fuel as it goes along. There are lots of other fusion possibilities.

Project Starshot involves a microchip and a large solar sail propelled by lasers: it needs a huge amount of energy to power the lasers if it is to achieve 10% of the speed of light.

Photon drives have also been mooted, again nuclear powered, but they would have quite a low acceleration.

Lastly, we looked at warp drives, called Alcubierre drives which need negative mass or energy. They may be impossible but would enable faster than light travel.

The best bet is probably Project Orion type rockets operating in deep space to make interstellar travel possible. It certainly needs to be a nuclear powered rocket of some sort.

Afterwards Bob Mizon gave a short talk on the night sky and the James Webb telescope, and Kate Earl gave a view of various probes in the solar system. Much appreciated!