

We occasionally get some very thought provoking talks at CADAS and one of these was given by Dr Richard Miles at our April 2022 meeting. Entitled "Is Dark Matter Ordinary Matter" his talk ran through the history of Dark Matter from Zwicky's analysis of galaxy cluster velocities, through Vera Rubin et al and the non-Keplerian distribution of velocities in galaxies to the current situation where all sorts of exotic matter is conjectured to explain these and other observations.

But what if it doesn't need to be exotic matter? Can ordinary matter explain these phenomena? Most of these theories up to now have used black holes, ordinary stars or brown dwarfs populating the intergalactic medium (MACHOs) to explain the gravitational effects. Dr Miles presented a number of fairly simple spreadsheets that looked at whether smaller objects could create the same effects but still be viable candidates throughout the history of the universe. Perhaps as befits the BAA Section Director for Asteroids and Remote Planets, these spreadsheets zeroed down on objects a few Km across populating the IGM at about 1 object per cubic AU. They would be difficult to detect but would be far enough apart that collisions during galactic encounters would be rare and they would then "follow the mass" as in the famous Bullet Cluster.

The main question is what are these conjectured objects made of and where do they come from? During the Q&A, Dr Miles elaborated that these could not be made of "heavy" elements as they would have to have been made in the interiors of stars which would have been inside galaxies and it's difficult to a) envisage a mechanism to get these out of the galaxies into a smooth enough distribution and b) to have enough of them to have the gravitational effects. One possibility is that of molecular Hydrogen "ice" which would readily condense out of primordial hydrogen as soon as the universe's ambient temperature got as low as 10K or thereabouts.

It's likely that the Q&A would have carried on for far longer but the half-time interval called! Many thanks to Dr Miles (who has generously donated his fees for the evening to the DEC Ukrainian appeal.)

Following the cake and brownies generously provided by Sue and Paul, we had a number of Society Business items to deal with.

It was agreed that the May meeting would be the "Ask the Panel" session bought forward from July. It is hoped that Tim Wetherell will now talk at the July meeting.

Stuart Davis has asked if it would be possible to re-invigorate the society's Facebook page. The page is difficult to find searching through Facebook (there seem to be **lots** of people with the surname Cadas) but Bud is confident that it still exists. A number of the members use Facebook so it was felt that a working page would be good for communicating.

Stuart has also asked if we could arrange members' observing sessions. We talked about this just after the great Covid lockdown and we believe that there are no objections from anyone regarding the hall or the field. We'll try to get an observing session organised for the latter half of one of the meetings in, say, August or September. This shouldn't preclude any more informal observing sessions that could be arranged on an ad-hoc basis. Perhaps a fully functional Facebook page would help!

Zena Morgan has had to give up providing the refreshments for the intervals. We're all incredibly grateful to her and her team for all of the work that they've done over the years and wish Zena all

the best and hope that she can come and visit without the need to get her pinny on. Sue Nicolson has volunteered to provide the cakes, etc. but wants to have support in the actual serving and cleaning up afterwards. A number of initial volunteers put their hands up and will help next month. I'm sure that there are other cake makers in the membership and they're asked to talk to Sue to share that responsibility. Many thanks to all for helping out. The break does have the effect of making the evening much more of a social occasion than just a meeting (as we saw last summer when the kitchen was out of bounds!)

The meeting was reminded that the Somerset Levels Stargazers are running a Dark Skies event on Sunday 24<sup>th</sup> at Othery (and on-line). Speakers will include Bob Mizon and last month's speaker, Jo Richardson.

Ken Honour first looked at the Astronomy Tools website and its Field of View calculator to preview what would be visible in his Takahashi telescope with his ASI camera. Naturally, this was followed by a number of images with this combination, including the Flaming Star nebula, M101 and M1.

Terry has returned from Australia and gave a short talk on his 5,000Km journey to relocate his AG12 telescope to its new site in Moorook, South Australia. The "first light" images of the Eta Carinae and Tarantula nebula along with the Centaurus A galaxy bode well for some good wide field images over the Southern Hemisphere winter.

The May meeting will be the "Ask the Panel" session and members are asked to come along with any (vaguely astronomical) questions for them.