Messier 15

Pegasus 21h 30m +12º 10’ *Great Pegasus Cluster*

Data of the sky region at the time of the observation .... **SQM-L 21.5 IR -11 Temperature 10º**
Data of the night .... **Sun alt: -57.7º Moon alt: -50º**
Data of the object........ **Alt: 47.3º Az: 279.8º**
Telescope .... **Stargate 18”**

Nagler 31mm (70x - 1º 10’ - 6.6mm)

What a beautiful object compared to for example M2. The first impression is simply one of beauty. It is a very large object, quite large, but the core is very small, it practically seems nearly point-like compared to the whole object and, of course, it is because the core is totally concentrated. The image is also so pretty because of the multitude of stars that are resolved on the outside. It is simply a beautiful object. Hundreds of stars are observed in the outer halo, totally individual, resolvable and in the center of the object a very bright nucleus of a tiny size, about a tenth of the object itself.

I insist once again, what is most impressive with this eyepiece is the difference of the core and the rest of the object. The nucleus is small, the halo is huge, the nucleus is very bright, the halo is faint, in the nucleus it is complicated to resolve stars, the whole outer halo is a magnificent set of stars that can be easily resolved. A spectacular view indeed. A good exercise is to compare it with the nearby M2 to feel even more shocked. It is worth delighting in the suggestive image offered at low magnification before preparing for the adventure of entering its interior.

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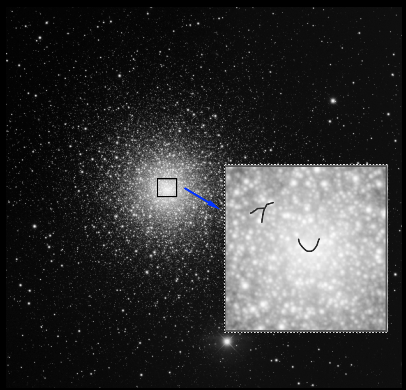
Nagler 22mm (98x - 50’ - 4.7mm)

The image of the cluster continues to amaze me even at such low magnifications. Some curious shapes in the core are beginning to be identified at the same time that some stars begin to resolve. Trying to describe it better, I make use of the side view focusing on the bright star close to the globular cluster. Taking this as a reference and placing it at 6:00 of the cluster, it can be observed that in the nucleus there is a grouping of stars that forms a kind of lying C or ‘*cradle*’. Above that lying C there is also a curious grouping of stars that reminds me of the asterism of Aquarius, the famous Y. To get that view I have to strain my eyes because it is very bright.

When I relax my eyes and contemplate it quietly and with lateral vision the effect is overwhelming, because the object gains in size (or so it seems to me) with hundreds of stars forming that ball of stars so magnificent. I think it is one of the best globular clusters that exist, so far of those I've seen with the 18" wins by a landslide.



In order to better show the image that I appreciate even at these low magnifications I have taken a photograph with much better resolution and show the object at a larger size with a zoom to the central region.

All images and cardinal references are represented according to the inverted orientation of a dobson telescope, i.e. with north at the bottom and east to the right.

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Delos 14mm (154x - 28' - 3mm)

The image is still spectacular, plus now the field is reduced when jumping from the 22 to the 14 (and changing eyepiece type with different apparent field). Perhaps the image is not as overwhelming as with the 22mm or with the 31mm, which left you spellbound in front of the eyepiece due to the fineness of the object. Now it is much larger, easier to identify each of the stars, however, something curious happens to me that also had a similar effect with M2, the stars that are in the center of the inner core, I find it more difficult to see them clearly. The telescope is very well collimated and I do not notice that the brightness increases to one side or the other when I defocus any star, but it is quite uniform (I will not say perfect because I think I have not seen that in my life, but it is very good). This is fundamental to be able to observe it well and the sky also accompanies with a very good seeing. Thus the external stars are very well seen, very punctual, however with the 22mm I could resolve very clearly the stars of the nucleus and here, simply, it is more difficult for me, despite having gained in size of the object. Anyway I still see that C shape lying on the core and the halo is spectacular full of stars and with a faint background of the thousands of stars that must compose it but that I am not able to resolve. I forgot to point out that in addition to the curious shape of the stars in its core, its color is surprising, with a golden tone compared to the intense white glow of the core on which these stars float. A beautiful image, I never tire of repeating it.

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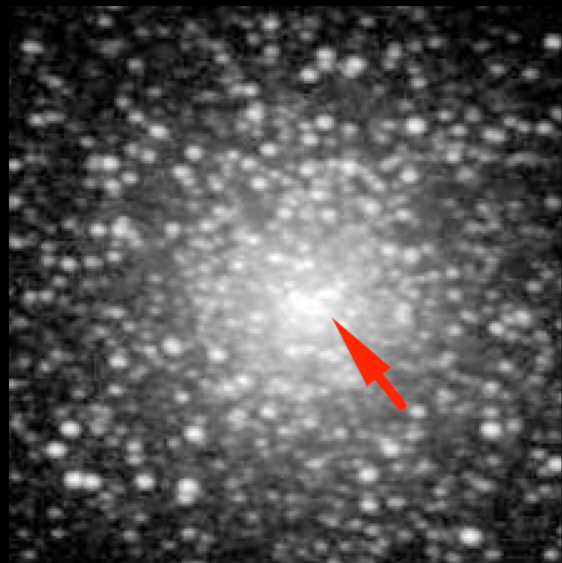
Ethos 10mm (216x - 27’ - 2.1mm)

I am very struck by the fact that I can see so much detail in the most central area of the object's core and so I continue to look at it in detail. Now I seem to observe that this C, or cradle of the core is actually "broken". That is, this asterisk is something like a series of stars that make a small curve to the interior of the cluster, then follow other stars that form a flat line, and then continue another series of stars in a curve opposite to the previous one, creating this kind of cradle or C lying down. In addition, in the turn of the C towards the first flat part that I have described, in that area, the asterism has a hollow, as if a small dark river were crossing it.

Jumping from this area of the object to the outside, I marvel at the contrast of brightness that exists. Just after this more central part, the brightness drops sharply although it is still intense and dozens of stars also appear above it, but continuing further out, I stop seeing any background brightness and now what I see are dozens and dozens of individual stars, all around the cluster, forming part of it. It's a real treat.

It is also true that the object can now occupy about 1/3 of the eyepiece, however I think this fact takes away a bit of the charm. That is to say, at low magnifications the impact of the image was magnificent, because you could see a very large object with a very small nucleus. At this magnification this impression has disappeared. Now it looks more uniform, the core is still small compared to the object itself, but it doesn't look ‘so small’ to me, or rather, it doesn't seem to me that the outer halo of resolvable stars is so extensive. Anyway, that's my impression.



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Telescope .... **Stargate 18”**

Ethos 8mm (270x - 22’ - 1.7mm)

In this jump I have not seen more detail than described above. The image is still beautiful but not as impressive as at low magnifications. The central part continues to mesmerize me with the details that I observe, although I can't contribute anything that I haven't described before. I am also struck by how I can manage to resolve those stars so close to the core. But I can't say that I have gained much more than with the previous eyepiece.

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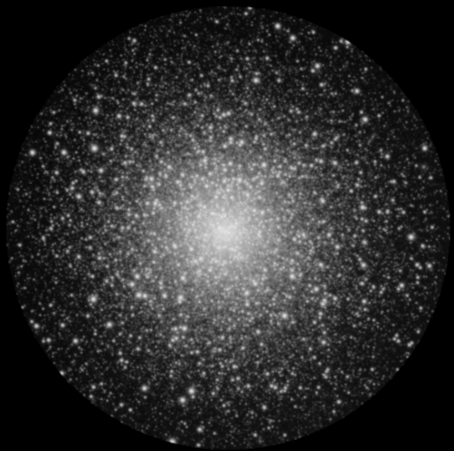


Delos 4.5mm (480x - 9' - 1mm)

With this eyepiece and with globular clusters the same thing always happens to me, I have the impression of 'destroying' the object. I am at such a high magnification and with such a reduced field that I enter inside the cluster, losing the reference of its outermost zone. It is also true that I see the outermost stars much more separated and they hardly attract my attention anymore. The parts of the core are now very evident but it is quite difficult for me to focus properly to get the point stars. In spite of seeing so much detail and counting so many stars, I am undoubtedly left with the image at low magnifications, perhaps with the 31mm because of the impact of the first image I saw, seeing the object so bright, with the stars so separated and resolved and that brightness so concentrated. Now, at these magnifications and with this field, the core occupies practically the entire eyepiece and at the edges of the eyepiece I see the outer halo and the stars that compose it, so I lose the overall view and I have to move with the motors to go through the entire eyepiece leaving the nucleus at one edge of the eyepiece. This image is also curious because you get an idea of the number of stars that the object has, but it loses the impact of the sensation of a variegated mass of stars, because you see a very bright core with stars that are resolved with difficulty (the focus here is crucial), and then a multitude of stars well separated from the outer halo. Anyway, curious and beautiful but better at low magnifications (at least according to my criteria).

Pease 1 - EXTRA Challenge

Data of the sky region at the time of the observation .... **SQM-L 21.5 IR -11 Temperatura ambiente 10º**
Data of the night .... **Alt sol: -57.7º Alt luna: -50º**
Data of the object .... **Alt: 47.3º Az: 279.8º**
Telescope .... **Stargate 18”**

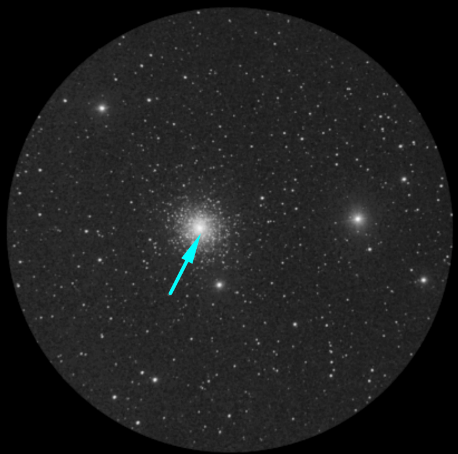
As an additional challenge to the observation of M15 we can consider looking for one of the few known planetary nebulae in a globular cluster, the famous Pease 1, also famous for its complexity to be observed visually.

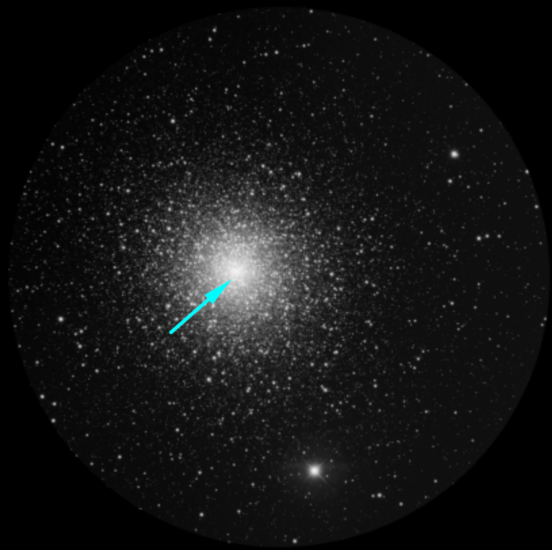
I must confess that for me it has been a real nightmare to find the planetary nebula. And I have only managed to see it in a very punctual moment and with very good seeing in particular. That is to say that once in the place where it should be I spent several minutes to get the image as sharp as possible to observe it. With this warning I encourage anyone to try this difficult challenge because not many people on the Earth have seen it (in fact the reports on the Internet are very few).

There is a good website that helps you to locate Pease 1, it is the following one: https://web.archive.org/web/20060620170127/http://www.blackskies.org/peasefc.htm

However, I consider my method to be more useful.

First I think it is interesting to get an idea of where the nebula is approximately, for this I point out its position with a couple of magnifications, at 98x and 270x.





Just with these images one can get an idea of the complex challenge, as the object is VERY, VERY close to the core of the globular cluster. Taking this into consideration and knowing that we need a night with a very good seeing, we will take on the challenge (if you have a planetary nebula filter it helps but it is not necessary).

Pease 1 - EXTRA Challenge

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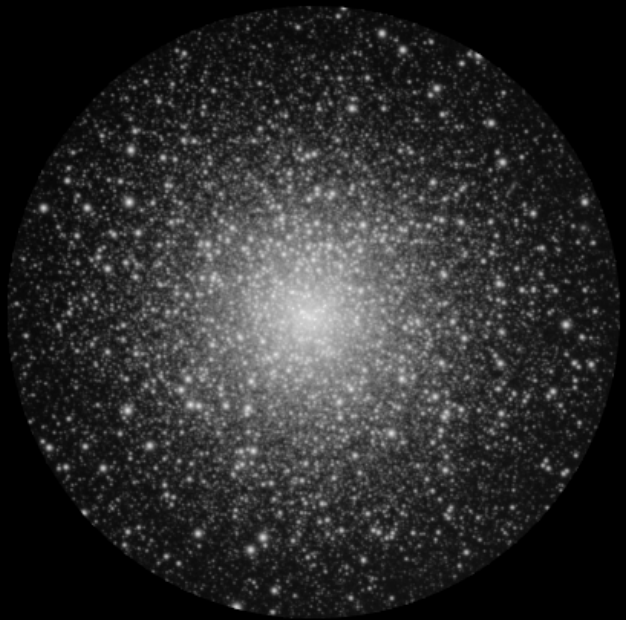
Telescope .... **Stargate 18"**

It is also critical that the telescope tracks well and that the motors allow you to move smoothly. I would recommend putting at least 500x on the scope and focusing as much as possible. I managed to see it with my 8mm Ethos plus the Powermate 2x, which gives me about 540x. With these magnifications, we must identify in the core of M15 the 'C' already described above, as it will serve as a guide, it is very simple because it is in the brightest part of the core, in its most central part. And if, previously, we have placed the brightest star close to the cluster at 6:00 the C will be face down as shown in the following images.



Ethos 8mm + Powermate 2x (540x - 11' - 1mm)

Once the mentioned C is located, we have to look at its 'base' which would 'point' to the famous bright star outside the cluster pointed out in the previous page at 270x almost at 6:00 of the eyepiece. Once located and looking from it, leaving the core of the globular cluster we will find three stars in the shape of an arc. They appeared to me outside the core since at high magnifications the faintest light of the object disappears, and with almost no background brightness they were very well seen. In the attached images it is a little misleading because it seems that many more stars are seen, but it is not so. At high magnification the field becomes very dark.

Doing the inverse route, that is to say from those three stars that have a very similar magnitude, to the core of the cluster you pass through an area of brightness concentration that seems to have several stars but it is difficult to resolve. There is the nebula. With patience and a good night you can see a kind of 'bulge' that comes out of the core of the cluster towards those three stars that I mentioned, forming the arc.