Two discussion session were held during the meeting.

The first one concentrated on the technical aspects of the spectral analysis, the second one on the broader scientific impact of the Gaia-ESO Survey data for massive stars.

These slides contain the highlights of these discussions.

The Carina nebula observations

- With its substantial number of young massive O-type stars, the Carina nebula region will become a Rosetta stone, on a par with the Tarantula nebula for the LMC.
- What will make the Carina region unique is that Gaia data will provide a 3D view of this region, allowing to disentangle the projection effects along the spiral arm.
- An important point is that the data will be homogeneous, due to the design of the Gaia-ESO Survey.
- Another important point is that the observations should be complete, in the sense that no pre-selection should be done and that every object should be observed.
- The Gaia-ESO Survey observations are basically complete for stars earlier than B3 (except for some heavily obscured stars), and are complete to mag ~ 13.5.
- There are complementary observations that go even deeper (but do not cover such a large area), going for the pre-main-sequence stars.

The Carina nebula observations (ctu'd)

- An additional grating (HR4, covering the Hγ line) for the early-type stars is strongly recommended. **Using Gaia-ESO Survey observing time to complete the data in this way is considered more important than doing more clusters.**
- It should also be explored if the additional grating helps for the B-type stars.
- For the sake of consistency, we would then need to redo the other massive-star clusters as well with this additional grating.
- We will also be able to determine the binary fraction in the Carina nebula region.
- For more detailed information about the binary orbital parameters, a follow-up programme would be needed.
- Such follow-up programmes would need the Flames instrument. But Flames will be decommissioned. We should join the existing protest against this decommissioning.

Overshooting

- Overshooting was much discussed at the meeting. Can you use the Gaia-ESO Survey data to improve this?
- You would need several tens/hundreds of stars to measure the main-sequence width, which would constrain overshooting. Besides the high quantity, data would also need to be high quality, and homogeneous.
- Asteroseismology would help for overshooting (as well as rotational mixing). It is still unclear if you can extend this from the lower-mass stars to the higher-mass ones.
- You can also use eclipsing binaries.
- Constraining overshooting will require all three: asteroseismology, eclipsing binaries and large samples of stars.

Binarity

- The Gaia-ESO Survey is not optimized to look for binarity (only two epochs at best).
- But also on a single spectrum you can recognize, or suspect, the presence of a companion.
- Triple systems (probably hierarchical) also play a role.

Benchmark stars

- Rather than using benchmark stars, it seems more obvious to split the temperature domain in segments that can be covered by the different model codes.
- But the overlap region between these codes is important for homogenization purposes.
- Data from various projects (such as IACOB) can be used to define a set of benchmark stars for the earliest stars.