

# ROUND TABLE DISCUSSIONS

Thursday 03/08/2017, 14:50-15:50

(Chair: Jianning Fu)

(Notes: prepared by Joanna Molenda-Żakowicz)

## 1. Distribution of the LAMOST-Kepler data

If you want to obtain access to the LAMOST observations acquired for the *Kepler* field and the K2 fields, the best approach is to contact Jianning Fu (jnfu@bnu.edu.cn).

All astronomers who intend to use the released data acquired with LAMOST have to follow the LAMOST policy for the use and publication of public LAMOST data. This information can be found on the LAMOST web site:

<http://lamost.escience.cn/dct/page/1>

Because that web site is in Chinese and the cn/en button is virtually invisible, the figure below provides information where to put the cursor in order to find it. (Unfortunately, the expected language change into English does not seem to work)



The international (= non-Chinese) astronomers who intend to use non-released LAMOST data have to submit an application to the LAMOST Scientific Committee to become an external collaborator. Groups of scientists that intend to carry out such projects have to include at least one Chinese collaborator.

The publications that are making use of the observations acquired with LAMOST have to be submitted to the LAMOST Scientific Committee at least two weeks before the planned submission of the article to the scientific journal. The LAMOST Scientific Committee can request adding a few co-authors to the papers based on the data acquired with LAMOST.

## **2. LAMOST + TESS**

*Marc Pinsonneault:* Good communication between groups that realize big projects is one of vital things that allow efficient studies of celestial objects, especially if the respective observations can complement each other. However, since the different scientific projects have different priorities requesting different approaches to the construction and optimization of respective instruments, an efficient cooperation may be not straightforward. Therefore, if the LAMOST team is interested in observing the targets of the TESS mission, I can help to get in contact with the people who are responsible for preparing the target lists for TESS and who can help them to select the best targets for LAMOST. For example, they can propose fields that are not too dense for LAMOST but that still contain targets that are vital for TESS. The TESS goal would be to uniformly cover the entire H-R diagram with the LAMOST observations of the TESS targets.

*Peter De Cat:* The short-cadence TESS targets may be the most important targets for LAMOST. In principle, all objects up to a certain magnitude limit will be observed by TESS on the full frame images. Also the ecliptic poles deserve special attention as they will be observed by TESS continuously for about one year while other parts on the sky will only be observed for 27 days.

*LAMOST team:* A first possibility is to apply for “add-on-programs”. In this case, up to 10% of the LAMOST fibers from other non-TESS-related projects can be assigned to observe carefully selected targets of the TESS mission. Another possibility is to start a LAMOST-TESS project (similar to the LAMOST-*Kepler* project) that focuses on some carefully selected TESS fields. If the TESS input catalog is shared with the LAMOST team, then a dedicated software can be used to analyze the target distribution on the sky and to prepare the list of targets for LAMOST. It is possible that the medium-resolution spectrographs will be used for the TESS targets.

### **3. LAMOST + Gaia**

*Antonio Frasca:* The LAMOST observations of Gaia targets can be used to provide the kinematic characterization of the Gaia sample.

*LAMOST team:* That can be done in a way similar to the one described for the TESS project. Also here, the Gaia and LAMOST team would have to cross-match their targets and find the best stars and fields to be observed with LAMOST. Since the observations acquired with LAMOST suffer from an unknown radial velocity offset of 5 km/s, Gaia may help to calibrate the results obtained with the LAMOST pipeline.

### **4. LAMOST Medium Resolution Survey (MRS)**

In September 2017, there should be 7 medium-resolution spectrographs running on the LAMOST instrument. By the end of the year 2017, all the 16 spectrographs are expected to operate in both the red and blue arms. The most important issue for now is the pipeline for products of these medium-resolution spectrographs.

*LAMOST team:* The pipeline is now being tested by using the spectrum of the Sun and Arcturus. After this, the pipeline will be tested for metal-poor stars. The appropriate template matching is a very important issue here. Next tests are needed to complete the procedure of flat fielding of the spectra and analyzing the spectra of the arc calibration lamps. The final stage of the process of calibration and reduction, i.e. obtaining the 1D rectified spectra, will be relatively easy because it will be done in a way similar to what is used now for the low-resolution spectrographs. Additional tests of the performance of the medium-resolution spectrographs can be done by observing the same targets in both the low- and medium-resolution mode and to compare the results of the respective pipelines.

*Richard Gray:* I can prepare a list of lines of metal-poor stars which will be useful when comparing the observed spectra with the theoretical ones. For example, one of the spectral features which can be very useful is the Mg triplet which provides information about the surface gravity of stars.

*LAMOST team:* The medium-resolution spectra will be available to the Chinese community within 6 months after acquiring the data. They will be released to the public 18 months after the observations. The international astronomers who intent to base their projects on medium-resolution LAMOST spectra can do it in the same way as described above, i.e. by forming a partnership similar to the LAMOST-Kepler project or by individual collaboration with Chinese partners.

## 5. Common target lists for large spectroscopic surveys

It would be very good for calibration purposes if all the big projects, that gather spectroscopic data for large quantities of stars, would include a carefully selected list of calibration stars in their lists of targets. Those stars would then be used to compare the results of the respective pipelines and to correct for possible trends and offsets. In order to form such a list, one can focus on the stars observed with the K2 mission. That would link the actual big space mission with next missions and ground-based projects. Another advantage of using K2 is that this mission observes in both hemispheres which will help to prepare a list of calibration stars that can be used in many different projects.

*Marc Pinsonneault:* The APOGEE project can provide such a list of calibration stars for giants. Other surveys should provide a list of dwarfs and other stars selected in an independent way, for example the asteroseismic calibration stars. Some good calibration stars can be found also in the cluster M67 or in the Pleiades. The LAMOST team could observe those targets continuously in order to keep control of the consistency of the performance of all the involved instruments.

*Antonio Frasca:* The same can be done by selecting stars from the Gaia-ESO survey.

*LAMOST team:* The continuous observations of calibration stars are feasible but the size of sample (number of stars) must be decided. There might be a few hundreds of such stars which should cover different spectral types, luminosity classes, etc. Those stars could form a “golden sample” of fundamental stars for all next studies and should be observed in high-resolution mode. Unfortunately, the stellar clusters are not the best choice for LAMOST because the respective fields are too dense for the LAMOST fibers.

## 6. Third LAMOST-Kepler workshop

*Focus:* The focus of the third workshop will still be on *Kepler*/K2 but it will be open to other projects too.

*Date:* The workshop should be organized when the medium-resolution data are ready so that they can be discussed during the workshop. The tentative date is early July 2019.

*Organizer:* China is currently the only candidate to organize the third LAMOST-Kepler workshop.

*Venue:* The location still needs to be decided, but it will most probably not be in Beijing to give the opportunity to the international collaborators to visit another part of China.