



NEWSLETTER

05/2020

Nº 10

- EDITORIAL
- ASTRONOMICAL NEWS
- LAST NASE COURSES
- TEACHING MATERIALS

EDITORIAL

We have arrived at course number 165 of NASE. Although the coronavirus has stopped some initiatives, we continue to think about the future all over the world, as you can see on the covers of the books we are enclosing.

In addition, we have called for a new project that you can even do at home, on the occasion of the International Day of Light. You can find the information in the NEWS section.



NEWS

NASE-IAU Project on the occasion of the International Day of Light: The Parallel Earth and the Seasons 2020

Within the initiative of the International Day of Light, NASE invites teachers and students to carry out the experience of the Parallel Earth. The description of the proposal is on the [NASE website](#), and you must send the data acquired and one or more photographs of the experience. If you wish, you can also send a photograph of a sundial taken by your students. The project will be open between the equinox of 20 March 2020 and 23 September 2020.



IAU Symposium 367: Education and Heritage in the Age of Big Data in Astronomy, December 9-14, 2020 in Bariloche, Argentina



The main objective of this Symposium is to give perhaps for the first time a global vision of Education and Heritage in the framework of the IAU objectives, taking into account the Strategic Plan 2020-2030 and to propose an eventual "next steps" map to follow and a global agenda for education in astronomy for the next decade, honoring, in turn, the educational paradigm used so far. There is a possibility of scholarships.

In addition, on December 14, 2020, a total eclipse of the Sun will travel from west to east of the territory of the Argentine Republic, crossing Patagonia. We will be able to move to the small town of Piedra del Aguila (about 200 km along Route 237, Province of Neuquén) on a one-day excursion for this event. The first part of the trip goes along the Enchanted Valley, an area full of hills and rock formations surrounding the Limay River.

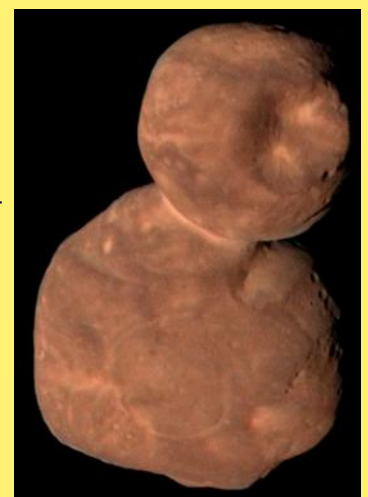
More information on the web: <http://sion.frm.utn.edu.ar/iaus367/>

THE FARTHEST OBJECT VISITED SO FAR

The New Horizons probe was launched from Cape Canaveral in 2006. In 2015 it flew over Pluto, and in 2019 it passed close to the furthest celestial object ever visited by a spacecraft.

At first it was called Ultima Thule, now renamed Arrokoth, which means heaven in the language of some North American Indians. It is a 36-kilometer body formed by two large spheres joined together, with the appearance of a "floating duck". It's one of the millions of objects that form the Kuiper belt, beyond the orbit of Neptune.

Arrokoth formed when the solar system was still forming around a very young sun. Judging from the few craters on its surface, it is thought that the object has remained almost intact since then and therefore may help explain the formation of planetesimals, which, when they clumped together, ended up forming all the planets of the solar system.





COURSES

145 NASE Course in Coaque-Manabi (Ecuador) 2-6 Sept. 2019

In cooperation with the National Polytechnic School, the Municipality of Pedernales, the Physics Center of the Central University and the Superior Agricultural Polytechnic School of Manabí.

45 teachers participated. Those attending the course were from different careers at the Escuela Superior Politécnica Agropecuaria de Manabí, the Escuela Politécnica Nacional and the Escuela Superior Politécnica del Chimborazo.

We also had a visit from a course of high school students (about 14 years old) with their teachers. We tried to do some workshop activities with them, for example: phases of the moon, space-time.



146 NASE Course in Tegucigalpa, Honduras - Sept. 23-26, 2019

In cooperation with the Faculty of Space Sciences, National Autonomous University of Honduras.

A group of 31 high school teachers attended.

With this course, activities were resumed within the new tripartite agreement between the National Autonomous University of Honduras, the Secretariat of Education of Honduras and NASE, which will be maintained for 3 years.



147 NASE Course in Addis Ababa (Ethiopia) - October 12-13, 2019

In cooperation with ESO and Ethiopia Space Science and Technology Institute.

Participants in general showed a lot of enthusiasm regarding the NASE training. They raised that what they appreciate the most was the practical part of the course. They managed to see that even using cheap and easily accessible materials they can still show many of physical laws.



148 NASE Course in Neuquén, Argentina, October 16-19, 2019

In cooperation with Consejo Nacional de Investigaciones Científicas y Técnicas.

The course took place at the Comahue National University, organized by the Engineering School and sponsored by CONICET. The attendees worked hard for 3 days, organized in a single group.



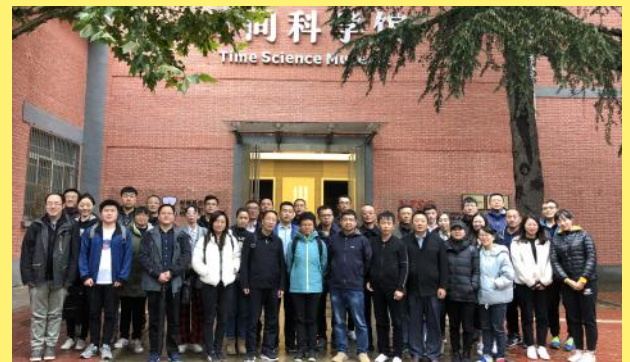
149 NASE Course in Xi'an, Shanxi (China) - October 21-25, 2019

The participants mentioned that the course was very good, They believe that it is interesting and useful for them in order to use in their schools. They enjoy mainly the activities but they would like to suggest another site in future occasions in order to get best observations.



150 NASE Course in Faro (Portugal), 23 Oct. -20 Jan. 2020

In general, the participants considered that the course had an excellent quality, although a professor of Philosophy, who enrolled in the course out of curiosity, considered that the scientific level of some lectures and workshops was too high, because he did not come from a scientific background.



151 NASE Course in Encarnación, Paraguay, 2-14 November 2019

The course was developed at the Regional Education Center Gral. Patricio Escobar from the city of Encarnación (370 km south of Asunción) department of Itapúa-Paraguay.

The local organization included the participation of the Departments of Physics, Teacher Training of the Faculty of Exact and Natural Sciences FACEN, the Astronomical Observatory Prof. Alexis Troche and the Science Dissemination Center of the Faculty of Polytechnics, the Institute of Teacher Training of Encarnación and the Institute of Teacher Training of Coronel Bogado, through the active participation of the Directorate of Sciences of the Ministry of Education and Science (MEC) of Paraguay.





152 NASE Course in Osaka (Japan) - November 9-10, 2019

Participants highlighted the workshops and activities carried out in the same, during the two days of the course. The possibility of making many workshops with a reduced amount of money funds and simple materials was very appreciated. All the assistants congratulated the organizers and the course instructors.



153 Course in Santiago (Panama) November 14-17, 2019

In cooperation with MEDUCA and SENACYT The seminar-workshop was attended by approximately 36 teachers, professors and tutors from the Panamanian Space Science Olympics (OliPaCE) of the Gnäbe Bugle Region, local NASE coordinators and the OliPaCE support team.



154 NASE Course in Barcelona, Spain, Nov-20 March-11, 2020

In cooperation with the Departament d'Ensenyament CEFIRE.

In general, the participants showed great interest and receptivity both to the contents of the course and to the experiments shown: they are forced to do so, as they said, in order to achieve an extreme performance of many of them (spectroscopy, IR radiation commands, etc.). Some of them have already met and/or have been made. But they have not been yet integrated in the course of an astrophysics course. And they recognized their educational potential.



155 NASE Course in El Salvador, November 25-29, 2019

Astronomy can be inserted by mathematics: trigonometry, conversions from grades to radians. A good methodology is to insert the knowledge acquired into the subjects of science and to do so in a more concrete way.



156 NASE Course in Cluj (Romania) - December 4, 2019- January 29, 2020

In cooperation with Mbarara University of Science and Technology.

In general, the participants considered that the course had an excellent quality. It was considered that, generally, the tools are very interesting.



157 NASE Course Lusaka (Zambia) - December 9-13, 2019

In cooperation with the Department of Physics of the University of Zambia and Copperbelt University.

An opinion: I enjoyed very much the course. Models are motivating and play with them is good for students. From her point of view: only talk is not enough. Talk and make something related in order to understand better is more productive.



158 NASE Course in Turda, Romania, Dec-10,-Feb. 4, 2020

In general, the participants considered that the contents were very useful for them. The teachers for the primary school were very enthusiastic and were very surprised that the course was not with much theory but with practical activities.

The teachers were very open and they asked questions about how they can make the experiments - for example for the spectrometers. It was considered that the course was very interesting and very good.



159 NASE Course in Rioverde City (Mexico) - December 13-14, 2019

29 teachers and 5 monitors participated. We don't know any more. But there are the two photos attached.



160 NASE Course in Der es-Salam, Tanzania, December 16-18, 2019

In cooperation with Astronomy and Space Science Association of Tanzania and the Open University of Tanzania.

Let the course be continuous. He should not end it here. But we should continue studying so that to learn more about space. I really congratulate the lectures for their dedication and diligently to educate us clearly that the understand them well because they were using participatory methods.

Good idea to teach primary and secondary school teachers because they are the source of education than the higher level.

161 NASE Course in Meru (Kenya), January 20-22, 2020

In cooperation with Meru University of Science and Technology.

Dismas thanked all the participants for their dedication and sacrifice during the training. In addition, the thanked the instructors for the extra work they had done to prepare for the workshop. Finally, the thanked the Professors from Spain (trainers) for being inspiring teachers.

162 NASE Course in Panama City, January 21-24 2020

In cooperation with the University of Panama, the Panama International Maritime University, the National Secretariat for Science, Technology and Innovation and ASTRANOVA.

Half of the participants taught Physics, a quarter taught Natural Sciences, the other quarter were Physics students and there was one participant who taught Chemistry. Most gave classes to people over 18, the others were distributed in the other levels. A funny thing is that half of them indicated that it was the first time they have experience in astronomy and the other half already had contact with it. Half came to the course for professional reasons and half for personal reasons..

163 NASE Course in Teustepe (Nicaragua), Jan. 20, Feb. 2, 2020

In cooperation with the Universidad Nacional Autónoma de Nicaragua, Managua and the Universidad Evangélica Nicaragüense It's the X course in this country.



One opinion: "The workshops were very useful, as a future social science teacher the topics addressed during the NASE course are related to our specialty. As a teacher, I had previously received talks at other universities but they had been short, so it was not possible to see the subject in depth. I liked this workshop very much, especially the practical part where the person captures the knowledge more, also the mastery of all the speakers on the topics they addressed, was excellent. From my side I am satisfied, I would like to have more workshops related to Astronomy".

164 NASE Course in Madrid (Spain) - February 1-2 2020

In cooperation with the European Association for Astronomy Education and the Association for the Teaching of Astronomy (ApEA)

A teacher from Gijón comments that it has been one of the most useful courses he has attended, with practical things he can use immediately.

Another opinion: start a NASE group in Spain, to reach all the places in the peninsula. He also comments that the course has helped him to put his knowledge of astronomy in order, and he also values the quality of the materials.



165 NASE Course in Rioverde City - Mexico Feb 21-22 2020

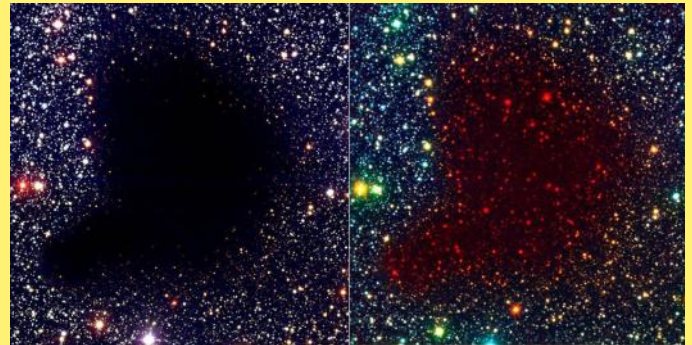
From this course we can show you the great pictures that are accompanied.



MATERIAL

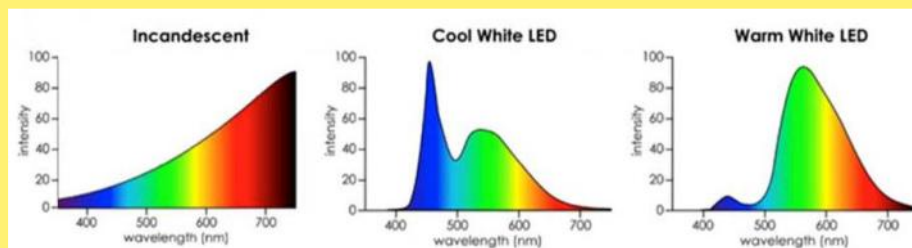
THE POWER OF INFRARED

In Astronomy the sky is observed in the infrared because this radiation crosses dark clouds that visible light cannot. For example in nebulae where planets are forming, in the centre or in the arms of galaxies. Observed with infrared detectors they show us structures and objects that are not seen if observed in the range of normal visible light.



Filament bulbs emit a lot of energy in the infrared, get very hot and are very inefficient for lighting, as a lot of infrared energy is wasted. With LED bulbs it's the opposite: they are designed

so that almost all the energy they emit is at wavelengths in the visible range, so they are much more efficient at lighting, and need to consume much less energy to illuminate with the same intensity.



Attached is the spectrum of light from an LED bulb and a filament bulb.

It is known that the cameras on most mobile phones detect near-infrared. We're gonna use that infrared "detector"; in our pocket.

Let's cover a light bulb from a mobile phone's LED flashlight with a dark tea towel. If you see some light, fold the cloth until you can't see the visible light with your naked eye. If we look with the camera on the cell phone, we don't see anything either. However, if we repeat it using an old flashlight with a filament bulb, when we cover it, we will not see its visible light, but with the camera of the mobile we will manage to see its infrared emission.



This can be done best with two sockets, one with a filament bulb (e. g. a halogen) and the other with an LED bulb of similar light intensity. Both are covered with a dark cloth that does not let visible light through, and you can see it with the camera, which does detect the infrared light coming from the filament bulb.



Other activities as this is on the [NASE website](#) (in Spanish and English).