

# Presentation of ARCTURUS, astronomy club of the UFABC

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**Abstract.** In this work, I present the astronomy club of the Federal University of the ABC (UFABC, from the Portuguese "Universidade Federal do ABC"), Arcturus, its history and past and present activities. Apart from presenting the club to the astronomical society of Brazil for the first time, the intention is to create contacts and initiate collaborations with other, similar, entities in the country. Astronomy is a science that fascinates many (Pinheiro, 2003), but in Brazil has been neglected in regular education (Langhi & Nardi, 2009). At the UFABC, it is not one of the priority areas. There are only three teachers of the area and a few of related areas, such as cosmology and astro-particles. The catalogue of lectures contains only a few courses in astrophysics, not enough to satisfy the interest of the students fascinated by this matter. In order to meet this interest and contribute to the education in the area, a group of students and I, a teacher specialized in the area, created an astronomy club. The astronomy club of the UFABC was founded on November, 12th, 2015, and received the name Arcturus, the name of the fourth brightest star of the night sky and of a street that gives access to one of the campuses of the university. 12 persons participated in this act, and since then, the number of members is fluctuating around this number, presently counting 10 members. The activities developed by the club include the construction of a telescope, sky observation nights and science dissemination events, this way helping to fill the gaps in the astronomy education of students of all levels in the ABC region. The club also presents itself yearly at the freshmen reception - and open door events of the university, attracting students to the UFABC and the area of astronomy. At present, it is engaged in the construction of a meteor monitoring station, and the creation of an astronomy course for the visually impaired. In conclusion, the astronomy club Arcturus is enriching the academic environment in the ABC region, complementing education with initiatives and events with the theme astronomy and will stay active for many years.

**Resumo.** Neste trabalho apresento o Clube de astronomia da Universidade Federal do ABC (UFABC), Arcturus, as suas história e atividades passadas e presentes. O intuito além de apresentar o clube à comunidade astronômica do Brasil pela primeira vez, é criar contatos e iniciar colaborações com outras entidades similares no país. A astronomia é uma ciência que fascina a muitos (Pinheiro, 2003), mas no Brasil tem sido negligenciada no ensino comum (Langhi & Nardi, 2009). Na UFABC, ela não é uma das áreas de prioridade. Há apenas três docentes da área e alguns poucos de áreas relacionadas como cosmologia e astropartículas. O catálogo de disciplinas conta com poucas disciplinas de astrofísica, que não conseguem satisfazer o interesse dos discentes fascinados por esta matéria. Para atender a este interesse e contribuir na educação na área, um grupo de discentes junto comigo, docente especializado na área, criamos um clube de astronomia. O clube de astronomia da UFABC foi fundado em 12/11/2015 e recebeu o nome Arcturus, o nome da quarta estrela mais brilhante do céu noturno e de uma rua que dá acesso a um dos campi da universidade. Neste ato participaram 12 pessoas, e desde então, o número de membros está girando em torno deste número, atualmente contando com 10 membros. As atividades desenvolvidas pelo clube incluem a construção de um telescópio, noites de observação do céu e eventos de divulgação científica, assim ajudando a preencher lacunas na formação em astronomia de alunos de todos os níveis no Grande ABC. O clube também se apresenta anualmente nos eventos de acolhimento de ingressantes e de portas abertas da universidade, atraindo alunos pra UFABC e pra área da astronomia. Atualmente, está engajado na construção de uma estação de monitoramento de meteoros, e na criação de um curso de astronomia para deficientes visuais. Em conclusão, o clube de astronomia Arcturus está enriquecendo o ambiente acadêmico na UFABC, complementando o ensino com iniciativas e eventos com a temática Astronomia e continuará ativo ainda por muitos anos.

**Keywords.** Teaching of Astronomy – Telescopes – History and philosophy of astronomy

## 1. Introduction

Astronomy is a science that fascinates many (Pinheiro, 2003), but has been neglected in regular education in Brazil (Langhi & Nardi, 2009). At the Federal University of the ABC (UFABC, from the Portuguese "Universidade Federal do ABC"), it is a priority area. There are only three teachers of the area and a few of related areas, such as cosmology and astro-particles. The catalogue of lectures contains only a few courses in astrophysics, not enough to satisfy the interest of the students fascinated by this matter.

In order to meet this interest and contribute to the education in the area, a group of students and I, a teacher specialized in the area, created the astronomy club of the UFABC, Arcturus.

In this work, I present the club, its history and past and present activities. Apart from presenting the club to the astronomical society of Brazil for the first time, the intention is to

create contacts and initiate collaborations with other, similar, entities in the country.

## 2. History of the club

The astronomy club of the UFABC was founded on November, 12th, 2015, and was given the name Arcturus, the name of the fourth brightest star of the night sky and of a street that gives access to the São Bernardo do Campo campus of the university. 12 persons participated in this act, and since then, the number of members is fluctuating around this number, presently counting 10 members. In 2017, it was accredited an official entity of the UFABC

It frequently organizes events in partnership with other entities, such as ASTROEM, an outreach project seeking to fortify the aerospace culture in basic education schools in Brazil, and the course for the general public *Ensino de Astronomia no*



FIGURE 1. The present day logo of the club Arcturus.

*Grande ABC* (Portuguese for Astronomy Teaching in the ABC region).

### 3. Activities

#### 3.1. Construction of the Telescope

The members of the club Arcturus constructed a 15 cm telescope from 2016 to 2019. It was used in public observation events both of the Sun by day and of the night sky.

Unfortunately, during the quarantine 2020-2022 due to the COVID-19 pandemic, the telescope disappeared from the UFABC premises, and has not been found back.

We are acquiring the material for the construction of a new telescope.

#### 3.2. Meteor Monitoring Station

The Arcturus Meteor Monitoring Station is an initiative of club member Luiz Mafra. Two security cameras of the model "HD Starlight nvp2441 + imx307" were installed on top of buildings of the UFABC, one each in the campuses Santo André and São Bernardo do Campo. Inside the buildings, we installed on computers that were donated by the university's Information Technology Nucleus (NTI), the meteor monitoring software UFOCapture, and are working on the interface between the cameras and the software.

#### 3.3. Lectures for the Visually Impaired

This project was also initiated by Luiz Mafra.

Dr. Amelia Ortiz-Gil of the University of Valência in Spain kindly made available to us the files for printing three-dimensional models of the Moon, Mercury, Venus, and Mars, which we were able to print on one of the UFABC's 3D printers. The models contain the surface features of these celestial bodies on an exaggerated scale, so they can be felt by the students, as well as tactile markings to identify their equators and poles.



FIGURE 2. Tactile models of Mercury and Mars.

We are contacting students with visual deficiencies of the UFABC through our pro-rectory of affirmative actions, ProAp (from the Portuguese "Pró-Reitoria de Ações Afirmativas") to participate in the lectures.

For a next step we also downloaded 3D printing files of plaques containing images in relief of the Milky Way, other galaxies, the Cosmic Microwave Background, and other objects from the Tactile Universe web-site.

#### 3.4. I Workshop

In 2017, the club organized the I Arcturus Astronomy Workshop, a scientific dissemination event, with lectures about astronomical subjects and a mini-course about using the free software Stellarium.

More than 100 people attended the lectures, and the mini-course took place four times, for classes of 30 pupils each. Most of the participants were students of the UFABC.

#### 3.5. Lectures for the General Public

Apart from that, we organize public lectures about astronomical subjects, such as relativistic space contraction by club member Marina Chacon, the Soviet Space Programme by member Rafael Candido, and the international collaboration VISCACHA Survey, by myself.

### 4. Conclusion

The astronomy club Arcturus is enriching the academic environment in the ABC region, complementing education with initiatives and events with the theme astronomy and will remain active for many years.

*Acknowledgements.* I would like to thank the organization of the XLVI Reunion of the Brazilian Astronomical Society for a wonderful event, Marina Chacon of the club Arcturus for giving the suggestion of presenting the club at the Reunion, and Rafael Candido, also member of the club, for revising the poster presented.

### References

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