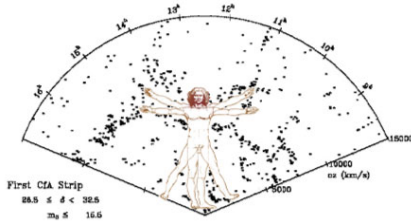


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PRIMO CONGRESSO NAZIONALE DI
ASTRONOMIA CULTURALE



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Closer to the sky: co-creating astronomical knowledge in a favela of Rio de Janeiro

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Closer to the sky is an IAU Office of Astronomy for Development funded open science project taking place in a favela of Rio de Janeiro, Brazil. It is the result of the collaboration between researchers and students from the Valongo Observatory (UFRJ), artists, educators, and community residents, with a network of partners and collaborators from several countries around the world, working at the intersection between astronomy for development and informal science education.

The motivation for Closer to the sky is racial inequality. In Brazil, racial inequality dates back to the heritage of colonialism, slavery and genocide of the indigenous and Black, Afro-Brazilian population, and it pervades all aspects of society today, including academia, STEM subjects and astronomy. Therefore it is our duty as members of society to address racial inequality in our immediate environment and beyond.

The project takes place in the Cantagalo-Pavão-Pavãozinho (PPG) favela, a community in the southern part of Rio, very close to two of the richest, most famous neighbourhoods of Copacabana and Ipanema. It's located on top of a hill, as many Brazilian favelas are, hence the name: Closer to the sky has a geographical inspiration, besides of course the aim of bringing people closer to the beauty of the universe.

Favelas are informal settlements common throughout Brazil, which score lower than other neighbourhoods on a number of development indicators, such as employment rate, average income, school abandonment, crime and state-perpetrated violence. It would however be ill informed to define favelas in deficit terms. They are home to tight-knit communities and a vibrant cultural and art scene, from funk and trap to street art and graffiti, which permeates the entire country even though it is still kept at the margins by mainstream culture. Closer to the Sky tries to address both these aspects by bringing science into the favela territory and co-creating scientific content by and for the local community members.

The project started in 2020 as an astronomy club in the PPG, prompting a dialogue between astronomers and their students, on one side, and the favela residents on the other, and the project was further developed by listening to the community members. This is the main takeaway of the project, which should actually be the approach for any public engagement project in marginalised areas: meeting the community where they are and co-designing the project according to the local needs. During the covid-19 pandemic, for example, due to the lack of proper internet access in most favela homes, a large number of children lagged behind in education for almost two years. Education is what community leaders flagged that astronomers could intervene on, providing extra-curricular activities that are not easily accessible in the favela. So the PPG astro club started offering weekly astronomy classes as well as English as a second language through an online link with a school in London.

Since 2022, Closer to the Sky moved to Ninho das Águias (in English, Eagle's nest), a library and cultural centre at the top of the hill, founded by two PPG residents in an area that was previously a dumping ground. There, astronomers offer weekly classes for children aged 4-12, exploring astronomy and basic science topics with a creative approach and a decolonial perspective, aiming to foster curiosity towards scientific topics while also challenging the underlying colonialist assumptions and biases. Classes involve different activities, encouraging peer-learning and cultivating a non-violent mindset.

In the process, the team realised there aren't many astronomy education resources available for this age group that are not based in a Eurocentric, white-male-cis-hetero-able-dominated framework, so we started to

develop the project's own resources. An example is exploring the African roots of science (e.g. the Ishango and Lebombo bones as mathematical tools) or Indigenous astronomical knowledge and constellations. This is being done together with artists, educators and volunteers from the favela. This is another key aspect of the project, with the dual purpose of engaging also the local adults in the co-creation of scientific content while at the same time promoting positive role models from the children's own community.

Thanks to IAU OAD funding, since 2024 it has become possible to engage a number of community residents in the project. For example, there are astronomy workshops mixed with graffiti, and the weekly astronomy class is followed by a hip hop class, during which the children rhyme about planets, stars etc. practicing the scientific content they learnt while also improving their memory, creativity and self-esteem.

Unfortunately, in August 2024, a fire destroyed the Ninho das Águas library, where the Closer to the Sky project is hosted. Classes are ongoing and the library is currently being rebuilt, also thanks to a widespread donation campaign.

The material created during classes will form a novel, decolonial courseware based on contextualized science, i.e. materials that use the context of marginalized societies as examples where we can understand, learn and make science. This will be shared as open educational resources in several languages so it can be useful to other similar projects around the world. We also plan to monitor the well being of children and adults as part of the IAU OAD flagship on Astronomy for mental health.

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