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UNIVERS@LL: INAF FOR EQUITY IN PUBLIC ENGAGEMENT

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RESUMEN

El ambicioso objetivo que persigue el Instituto Nacional de Astrofísica de Italia (INAF) es hacer que la astronomía sea lo más "sin barreras" posible, dentro del marco del Diseño Universal. Promovemos el uso de la Astrofísica y las Ciencias del Espacio para fomentar y apoyar la autodeterminación y la autoexpresión individuales, independientemente de las capacidades individuales, el género, el estatus social y el origen cultural. El grupo de trabajo UNIVERS@LL del INAF, para la inclusión en la educación y la divulgación, apoya y coordina proyectos de participación pública dirigidos a fomentar la equidad de acceso a la cultura científica y tecnológica. Además, con nuestro trabajo, buscamos fomentar la conciencia sobre la diversidad y la equidad incluso dentro de nuestro contexto académico de referencia. Aquí presentaremos el trabajo que algunos miembros del grupo han estado realizando para la exposición temporal "Máquinas del Tiempo", centrada en la investigación astronómica de vanguardia, que se llevará a cabo desde noviembre de 2023 hasta marzo de 2024 en el "Palazzo delle Esposizioni" (Palaexpo) en Roma.

ABSTRACT

The very ambitious goal that the Italian National Institute of Astrophysics (INAF) pursues is to make astronomy as much "barrier-free" as possible, within the framework of Universal Design. We promote the use of Astrophysics and Space Sciences to encourage and support the individual's self-determination and self-expression, regardless of individual abilities, gender, social status, and cultural background. The INAF working group UNIVERS@LL, for inclusion in education and outreach, supports and coordinates projects of public engagement aimed at fostering equity of access to scientific and technological culture. Moreover, with our work, we aim to foster awareness about diversity and equity even within our academic reference context. We will present here the work some members of the group have been doing for the "Time Machines" temporary exhibition, focusing on cutting-edge astronomical research, running from November 2023 to March 2024 at the "Palazzo delle Esposizioni" (Palaexpo) in Rome.

Key Words: astronomy exhibition — equity — accessibility — universal design

1. INTRODUCTION

The working group UNIVERS@LL at the Italian National Institute for Astrophysics (INAF) is a group of over 20 voluntary members, still growing. The work we do involves studying and designing activities to promote equal access to scientific culture. The name of the group rightly suggests that we consider the term "universal" more appropriate than "inclusion" since the latter somehow implies the presence of a subject and an object, a subject that includes someone else who needs to be included. We prefer to talk about activities and resource designed to be accessible to anyone without needing to be adapted. We refer to the framework of the social model of disability (Shakespeare 2010), which sees any disability as the interaction between the personal limit, perhaps the personal difficulty of any person, with the context of life that could disable or enable this disability, reducing it or enhancing it.

For activities and resource we have three different ways of designing: equality, equity, and justice[4]. Equal events, activities and resources are designed so that the tools for accessing them are distributed equally. In equity, the tools are customized to all participants. And in justice, the activity, research, or event are designed in such a way that there is no need for tools to access. Speaking of equity, we can have resources and activities that include tools and aids to make the experience usable and accessi-

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[4]https://www.bu.edu/diversity/resource-toolkit/inequity-equality-equity-and-justice/

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Fig. 1. Image of the "Time Machines" exhibition.

ble even for individuals who have some specific need or difficulty. Pure justice is really hard to achieve, and the goal of designing activities, events and resources without barriers is often referred to as the barrier-free utopia (Shakespeare 2010). We refer to the framework of Universal Design, which was first defined by Ronald ma in 1985 (Mace et al. 2010) as the design that is usable by all people to the greatest extent possible, without needing adaptation. We believe that precise and conscious design can allow the creation of welcoming and multimodal environments and resources that at least don't point the finger on diversities but make it emerge as a richness of visions and approaches.

2. EQUITY IN THE "TIME MACHINES" EXHIBITION

The Italian National Institute for Astrophysics is much committed to studying resources and environments that promote equity in access to scientific culture. An example of this is the "Time Machines" exhibition (Fig. 1), designed and created by INAF, which will be shown at the Palazzo delle Esposizioni, a major exhibition area in Rome, Italy, from November 2023 to March 2024. All the inclusive and educational activities related to this exhibition have been developed thanks to the support of the Office of Astronomy for Education Centre Italy. The exhibition central core is the idea, very common in astrophysics outreach, that looking farther away in space is like looking farther back in time because light takes time to reach us, thus the further you look in space, the further back in time you're looking. This is why the exhibition is called "Time Machines". The way of looking back in time is to use telescopes and observe with these "time machines" the universe as it was many years ago. This is a very popular exhibition, inspired on the atmospheres and graphics of the 1980s. We have been studying and implementing some design features that foster the exhibition accessibility for all.

Fig. 2. Part of the "Time Machines" exhibition.

Fig. 3. Tactile map of the Moon.

For example, we are preparing alternative texts for the main images of the exhibition and also for the route that can be followed during the exhibition, so that there is a voice that helps understand how space

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is divided and all the physical features of the space around you, and also what's visible, what you could like to explore in this space even if you're not sighted.

One of the exhibits in the show is a screen showing an astronomical image (Fig. 2) that, through a webcam and the software Herakoi, can be sonified with a hand, in the sense that the region of the image pointed by the user's finger plays a sound that map its intensity with different pitches of sound.

We have created tactile maps of the Moon (Fig. 3) that have been studied accurately and prepared using drawings from Galileo Galilei, combined to create the eight lunar phases. Each map represents the Moon as rounded, (and not just the shape visible because it's illuminated by the Sun), with the shadowed part shown with a different tactile texture.

Finally, we have created some video narrations using the Italian sign language (Fig. 4). We didn't make a glossary with the astrophysical terms, but we preferred, with the help of expert linguists in Italian sign language, to use some storytelling in which to include signs for important astrophysical terms.

Fig. 4. Video narrations of astronomy using the Italian sign language.

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