

USE OF VISUALIZATION IN NON-VISIBLE SCIENCE AND ALTERNATIVE SENSORY REPRESENTATIONS

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ABSTRACT

Scientific visualization is the visual representation of data, in the form of images and/or diagrams, used by scientists and science communicators to better understand and illustrate research results and discoveries. As for any area of communication, scientific visualization implies a set of rules that encode information in a visual form. The code is often tacit and this can lead to misinterpretations, misunderstandings or even misbeliefs about the background science, especially in the case of highly figurative and realistic visual representations.

We argue that the use of arbitrary and non-figurative representations leads to a more conscious and effective usage, also overcoming the cognitive limits of visual representations.

In this framework, we investigate the suitability and efficiency of sensorial representations of scientific data that do not use sight, but rather hearing and touch.

In particular we discuss the possibility to represent radio astronomical data (invisible to our eyes) through sonification and haptic elements. We describe the design and implementation of our experiment, the testing and evaluation process, as well as the results of such an experimentation both with sighted and blind or visually impaired users.

