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The 40m radiotelescope of the Yebes Observatory.

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Abstract

The Yebes Observatory is one of the six Spanish "Infraestructuras Científicas y Técnicas Singulares" (ICTS) in astronomy and manages a 40m radio telescope as its main facility with open and competitive access. Since 2019, thanks to the Nanocosmos project, observations at 31.5–50 GHz and 72–90.5 GHz with an instantaneous bandwidth of 18 GHz are available, making it possible to observe many molecular transitions with single tunings in single-dish mode. This reduces the observing time and maximises the output from the telescope. The most remarkable result bringing by this upgrade is the detection of more than 50 new molecular species in space in the last three years in a wide variety of astrophysical environments. In addition, Yebes Observatory has recently built and installed a new C band receiver which covers the frequency range 4.5–9 GHz. Its main goal is to be used for very long baseline interferometry (VLBI), cover the two main European VLBI network (EVN) observing bands and provide a wide band of 4 GHz. This is a transition receiver which will work until an ultra wide one between 4 and 18 GHz (VLBI global observing system) is built and installed. One of the main goals is the design, construction, measurement, installation and commissioning of a high sensitive cryogenic receiver with an instantaneous bandwidth between 18 GHz and 32 GHz that will be deployed at the Yebes 40m radio telescope. This receiver will be a step forward in an ultimate goal that consists in having a full observable frequency coverage between 4 and 90 GHz at the 40m radio telescope.

My poster is available at https://zenodo.org/record/7035743#.Y8Juj3bMKUk