Contribution ID: **5** Type: **Invited Talk**

# Development of a multiband heterodyne receiver with 49 GHz of instantaneous IF Bandwidth

Increasing the IF bandwidth in heterodyne receivers is one of the main priorities of the ALMA Development Roadmap. One alternative approach to this problem is to increase the number of IF outputs to achieve the same goal of reducing observation time. In this work, we propose the use of a multiband heterodyne receiver architecture in conjunction with digital sideband separation to achieve complete RF coverage with multiple IF outputs. The selected band to test this architecture is ALMA Band 2+ (67-116 GHz), obtaining an instantaneous IF bandwidth of 49 GHz with four IF outputs. We will present a comprehensive analysis of the proposed design, showing its advantages and limitations, as well as giving possible options of how this architecture can be implemented in the upper-frequency bands of ALMA.

**Author:** MONASTERIO, David (Universidad de Chile)

**Co-author:** Dr MENA, Patricio (National Radio Astronomy Observatory)

**Session Classification:** Beyond 2030

**Track Classification:** ALMA-FED 2021 Contributions: Invited Talks