

# HEISENBERG UNIQUENESS PAIRS AND UNIQUE CONTINUATION FOR HELMHOLTZ EQUATION.

AINGERU FERNÁNDEZ-BERTOLIN

ABSTRACT. In 2011, Hedenmaln and Montes-Rodríguez introduced the concept of a Heisenberg Uniqueness Pair  $(\mathcal{M}, \Sigma)$  with  $\mathcal{M}$  a manifold in  $\mathbb{R}^d$  and  $\Sigma$  a set in  $\mathbb{R}^d$ , as a pair where the only finite measure  $\mu$  supported in the manifold  $\mathcal{M}$  and such that its Fourier transform vanishes on  $\Sigma$  is the identically zero measure. Also in 2011, Sjölin and Lev, independently, provided examples in  $d = 2$  in the case of  $\mathcal{M}$  the unit circle and  $\Sigma$  the union of two intersecting lines.

Since the Fourier transform of a measure supported in the circle can be seen as a solution of the Helmholtz equation, our aim in this talk is to give new proofs of the result due to Sjölin and Lev looking at Heisenberg Uniqueness Pairs from a PDE point of view. Moreover, this new approach will allow us to extend these results to a broader sense.

This is a joint work with Ph. Jaming (Université de Bordeaux) and K. Gröchenig (Wien Universität).