

SEMINARIO DE ANÁLISIS COMPLEJO (COMPLEX ANALYSIS SEMINAR)

**Frames and Riesz bases of dilated functions**

JORGE A. ANTEZANA, UAM

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Aula/Room 520, Módulo/Module 17

Departamento de Matemáticas, UAM

**Abstract:**

Inspired by the work of Hedenmalm, Lindqvist, and Seip [1], we consider families of functions of the form

$$\Phi = \{\varphi_j(n \cdot) : j \in J, n \in \mathbb{N}\},$$

where  $J$  is a finite or countable set and the functions  $\psi_j$  are defined on the real line. A natural framework to study this problem is the Hilbert space of almost periodic functions in the Besicovitch sense  $\mathcal{B}_2$ . Let  $\mathcal{S}$  be the (closed) subspace of  $\mathcal{B}_2$  generated by the elements of  $\Phi$ . During the talk, we will discuss when the families  $\Phi$  form a Riesz basis (resp. frame) for the subspace  $\mathcal{S}$ . The characterizations we obtained are given in terms of multipliers in the Hardy space of infinitely many variables, and they are motivated by the works related to shift-invariant spaces. Our results recover those in [1] when the set  $J$  has only one element. This talk is based on an ongoing project with Daniel Carando, Melisa Scotti, and Tomás Vidal.

*References:*

- (1) H. Hedenmalm, P. Lindqvist, and K. Seip, A Hilbert space of Dirichlet series and systems of dilated functions in  $L^2(0,1)$ , Duke Math. J., 86(1):1–37, 1997.