

**Centro de Investigação em Matemática e Aplicações**  
**Departamento de Matemática**  
**Programa de Doutoramento em Matemática**

**Seminário (online)**

**20 de abril de 2022, 15h**

**Fractional Poisson Analysis in one Dimension**

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**Resumo:** In this talk we use a biorthogonal approach (Appell system) to construct and characterize the spaces of test and generalized functions associated to the fractional Poisson measure  $\pi_{\lambda,\beta}$ , that is, a probability measure in the set of natural (or real) numbers. The Hilbert space  $L^2(\pi_{\lambda,\beta})$  of complex-valued functions plays a central role in the construction, namely, the test function spaces  $(N)_{\pi_{\lambda,\beta}}^\alpha$ ,  $\alpha \in [0,1]$  is densely embedded in  $L^2(\pi_{\lambda,\beta})$ . Moreover,  $L^2(\pi_{\lambda,\beta})$  is also dense in the dual  $((N)_{\pi_{\lambda,\beta}}^\alpha)' = (N)_{\pi_{\lambda,\beta}}^{-\alpha}$ . Hence, we obtain a chain of densely embeddings  $(N)_{\pi_{\lambda,\beta}}^\alpha \subset L^2(\pi_{\lambda,\beta}) \subset (N)_{\pi_{\lambda,\beta}}^{-\alpha}$ . The characterization of these spaces is realized via integral transforms and chain of spaces of entire functions of different types and order of growth. Wick calculus extends in a straightforward manner from Gaussian analysis to the present non-Gaussian framework.

This is a joint work with Jerome B. Bendong and Sheila M. Menchavez from CSM, MSU-IIT, Iligan City, Philippines.



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