



# Seminário de Probabilidade

Instituto de Matemática



**Título:** Inhomogeneous percolation with random one-dimensional reinforcements

**Palestrante:** Alan Bruno do Nascimento (UFMG)

**Data:** 15 de janeiro de 2024 (segunda-feira)

**Horário:** 15:30h

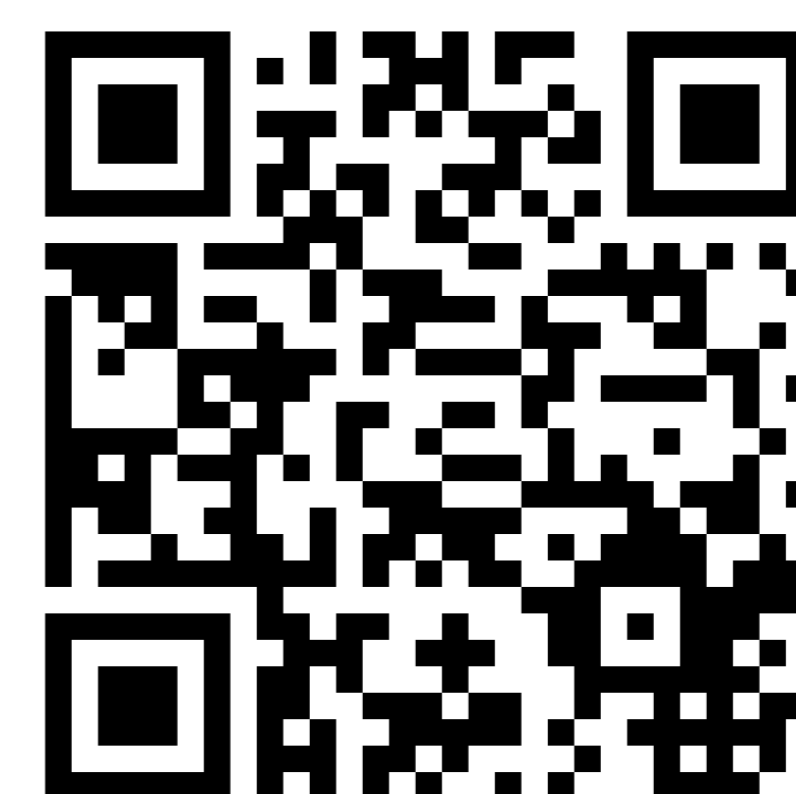
**Local:** Sala C116, Instituto de Matemática - UFRJ

**Resumo:** In this talk we consider inhomogeneous Bernoulli bond percolation on the graph  $G \times \mathbb{Z}$ , where  $G$  is an infinite connected graph with bounded degree and  $\mathbb{Z}$  is the set of integers. In 1994, Madras, Schinazi and Schonman showed that there is no percolation in  $\mathbb{Z}^d$  if the edges are open with a probability of  $q < 1$  if they lie on a fixed axis and with a probability of  $p < p_c(\mathbb{Z}^d)$  otherwise. Here, we consider a region given by boxes with iid radii centered along the vertical axis  $\{0\} \times \mathbb{Z}$  of  $G \times \mathbb{Z}$ . We allow each edge to be open with a probability of  $q < 1$  if it is inside this region and with a probability of  $p < p_c(G \times \mathbb{Z})$  otherwise. The goal of the talk is to show that, even if the region is connected, occurrence or not of percolation in this inhomogeneous model depends on how sparse and how large are the boxes placed along the axis. We aim to give sufficient conditions on the moments of the radii as a function of the growth of the graph  $G$  for percolation not to occur.

This is a joint work with Rémy Sanchis and Daniel Ungaretti.

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