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cmm.uchile.cl

Beauchef 851, Edificio Norte, piso 7
Santiago, CHILE
CP 837 0456

tel +56 2 2978 4870

**Seminario de Probabilidades de Chile**

**Orador:** Loïc Gassmann, Universidad en Friburgo, Suiza

**Título:** Comparison of arm exponents in planar FK-percolation.

**Resumen:**
FK-percolation is a generalisation of Bernoulli percolation that was found to be related to a wide range of other models in statistical mechanics, including the Ising model and the six-vertex model. In this talk, we will focus on the specific case of critical planar FK-percolation in the continuous phase transition regime. In this setting, the model exhibits properties similar to those of critical planar Bernoulli percolation; in particular, the Russo-Seymour-Welsh theory applies and the model is conjectured to be conformally invariant.
Conformal invariance would imply that the probabilities of arm events are governed by arm exponents. Using the FKG inequality, one can establish natural inequalities involving these exponents. We will show how to strengthen these FKG results by establishing strict inequalities. Specifically, we will use the Russo-Seymour-Welsh theory to prove a refined inequality between the probability of the alternating two-arm event and the product of the probabilities of having a primal arm and a dual arm, respectively. It follows that if the alternating two-arm exponent $\alpha_{01}$ and the one-arm exponents $\alpha_0$ and $\alpha_1$ exist, they must satisfy the strict inequality $\alpha_{01} > \alpha_0 + \alpha_1$. This result enables us to extend a method of Garban and Steif to prove the existence of exceptional times for Bernoulli percolation on the square lattice (without assuming conformal invariance).

This is a joint work with Ioan Manolescu. A preprint of the work presented in this talk is available on arXiv (arXiv:2410.23013).

El enlace para conectarse al seminario es:

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**Modalidad híbrida en la sala Maryam Mirzakhani, Torre Norte Piso 6, , Beauchef 851.**
**Miércoles 23 de Abril 2025 a las 16:15 horas.**