



**Laboratório de Instrumentação e  
Física Experimental de Partículas**

## **LIP Seminar**

Thursday, 7 May, 11h30

# **Finders, Keepers: Statistical fluctuations, causality, and whatnot in particle physics**

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Classical hypothesis testing constitutes the backbone upon which scientific results are produced in most fields, but it is now under attack as a facilitator of the so-called reproducibility crisis. Although classical testing has been paramount to the discovery of the Higgs boson and the "five-sigma" threshold is considered more robust than the two-sigma threshold used in other fields, the approach has intrinsic limitations even in particle physics;

I will review the classical approach, comparing it with the Bayesian one, and delve into a few spectacular examples of "flukes" from particle physics.

Finally I will give a few perspectives in view of the latest debates on the topics of severe testing and causality in statistical inference.

**Location: Videoconference - Zoom**

**<https://indico.lip.pt/event/704/>**

**Connection details**

**URL: <https://videoconf-colibri.zoom.us/j/99842372416>**

**PIN: LIPseminar**

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Meeting ID: 998 4237 2416

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