



Invitation

Logic Colloquium

Konstantin Genin

(Cluster of Excellence "Machine Learning", Tübingen)

On Falsifiable Statistical Hypotheses

the talk will take place

on **Monday, 16.01.2023** at **15:15** in room **F426**.

All interested are welcome to attend

Abstract: Popper argued that a statistical falsification required a prior methodological decision to regard sufficiently improbable events as ruled out. That suggestion has generated a number of fruitful approaches, but also a number of apparent paradoxes and ultimately, no clear consensus. It is still commonly claimed that, since random samples are logically consistent with all the statistical hypotheses on the table, falsification simply does not apply in realistic statistical settings. I claim that the situation is considerably improved if we ask a conceptually prior question: when should a statistical hypothesis be regarded as falsifiable. To that end I propose several different notions of statistical falsifiability and prove that, whichever definition we prefer, the same hypotheses turn out to be falsifiable. That shows that statistical falsifiability enjoys a kind of conceptual robustness. These notions of statistical falsifiability are arrived at by proposing statistical analogues to intuitive properties enjoyed by exemplary falsifiable hypotheses familiar from classical philosophy of science. That demonstrates that, to a large extent, this philosophical tradition was on the right conceptual track. Finally, I demonstrate that, under weak assumptions, the statistically falsifiable hypotheses correspond precisely to the closed sets in a standard topology on probability measures. That means that standard techniques from statistics and measure theory can be used to determine exactly which hypotheses are statistically falsifiable. In other words: the proposed notion of statistical falsifiability both answers to our conceptual demands and submits to standard mathematical techniques.

Carolin Antos, Salma Kuhlmann
Coordinators of the Logic Colloquium

For information and schedule please visit

http://www.math.uni-konstanz.de/~serra/index_Logic.html