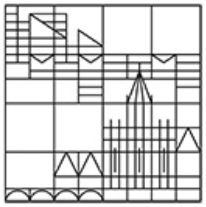

Invitation

Logic Colloquium

Salvador Mascarenhas

(ENS Paris)

Question-answer dynamics in probabilistic and deductive reasoning

The talk will take place
on **Monday, 16.5.2022** at **15:15** in room **F420**
and will be streamed at

`https://uni-konstanz-de.zoom.us/j/91253556446?pwd=VkJuMllzWE1xeWVtWU9PRStoanhzQT09`

All interested are welcome to attend

Abstract: In a range of probabilistic reasoning tasks, humans seemingly fail to choose the option with the highest posterior probability (i.e. the highest chance of being true). For example, in their seminal 1973 article, Kahneman and Tversky presented human participants with descriptions of individuals, and observed that participants produced judgments of the probability that those individuals belonged to one of two professions (lawyers vs. engineers) while seemingly ignoring the prior probabilities of those two categories in the sample at hand. One family of theories hold that human reasoners in such decision tasks ask themselves to what extent a piece of information supports a particular conclusion (Crupi et al. 2008, Tentori et al. 2013). In this view, participants ignore prior probabilities in the lawyers-engineers paradigm because they are interested in the extent to which the description supports a lawyer or an engineer hypothesis, regardless of prior probabilities. This confirmation-theoretic view has been extremely successful at modeling human behavior in many probabilistic reasoning tasks, and it has been applied to recalcitrant fallacies from deductive reasoning (Sablé-Meyer & Mascarenhas, 2021). Yet, a justification for it is lacking to this day. That is, however rational (Bayesian) confirmation-theoretic strategies might be as means of assessing the extent to which some evidence supports a hypothesis, it is an open question *why* humans would engage in such a process, when at least at first blush the most rational strategy in

a decision task of this kind is to identify the option with the highest posterior probability, which entails taking prior probabilities into account.
In this talk, I propose that confirmation-theoretic behavior is a result of question-answer dynamics, which are pervasive in human reasoning (Koralus & Mascarenhas 2013, 2018; Sablé-Meyer & Mascarenhas 2021). Again returning to the lawyers-engineers example, I argue that participants consider the description they are given as a hint at an answer, as if uttered by a cooperative and well-informed speaker, meant to help them determine which of the two alternatives is most likely to be true. In this framing of the task, confirmation-theoretic behavior is the result of relevance-based reasoning, as has been formalized in various ways within the literature on linguistic pragmatics. I give a unified account of multiple data points from the heuristics and biases literature and from deductive reasoning in terms of question-answer dynamics, recruiting theories of questions from linguistic semantics and philosophical logic. Additionally, I report on a behavioral experiment that recreates question-answer dynamics with minimal language use, showing that these phenomena do not wholly depend on language.

Carolin Antos, Salma Kuhlmann
Coordinators of the Logic Colloquium