



# The Anthropic Principle - Science or Metaphysics?

**Tuesday, 21 January, 2025**  
**Auditorium & Webcast 16:00 h**

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The anthropic principle, or anthropic reasoning, has given rise to numerous disputes about its status as a valid tool in scientific inquiry and its connection to metaphysics. In this talk, I will discuss the concept of anthropic reasoning as an observational selection effect. I will argue that using the anthropic principle in the context of cosmology requires the - at least theoretical - presence of a multiverse, a collection of a very large set of different universes. However, anthropic reasoning remains at best a 'half-science', as its past uses lacked falsifiability - the ability to use observational results to disfavour anthropic reasoning.

Given this background, I will then discuss a recent proposal for using ultra-light axion dark matter (so-called fuzzy dark matter) to test the anthropic principle. Gravitational and astrophysical observations can discover a light axion in the regime where it must be all of dark matter with an abundance set by the anthropic principle. Yet it may turn out that dark matter is something else instead of this axion and this would invalidate the anthropic prediction of the dark matter abundance.



**ZOOM ID: 996 1652 8733**  
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