


Physics as Information Processing - Lecture 1, “Historical Perspective”

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2023-05-18 Version 0.1.0

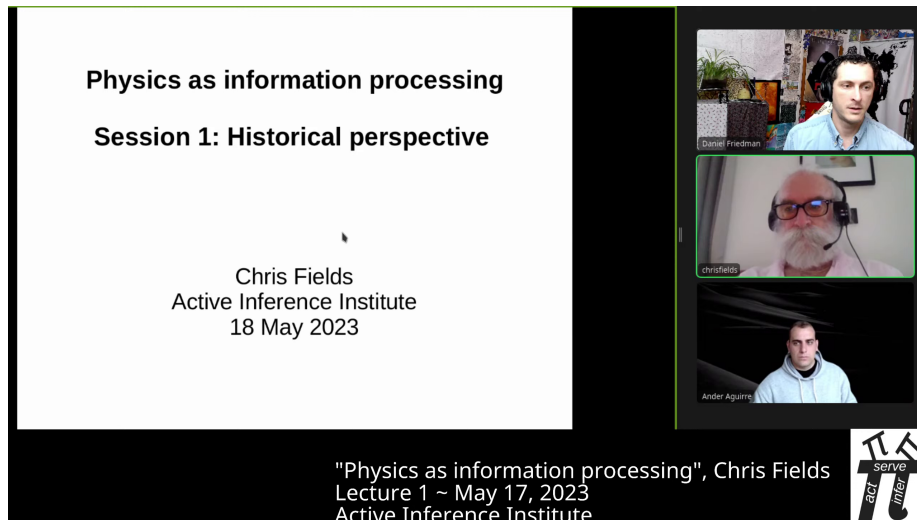


Figure 1: Chris Fields presents “Physics as Information Processing” at Active Inference Institute, 2023

INTRODUCTION

Daniel: Hello and welcome, everyone, to the Active Inference Institute. This is Session 1 of the course “Physics as Information Processing” with Chris Fields.

And then we’ll carry on with the first lecture, here. Check out the video description for a link to the Course Overview website, where you can ask questions that will be answered asynchronously; register to participate in the discussions, which happen about two weeks after each of the six lecture sessions;

and just learn more about this area.

Chris: Thank you, Ander.

HISTORICAL PERSPECTIVE: PHYSICS

This is a course on “Physics as Information Processing,” and this first session will be a historical perspective on the idea that physics is, or is about, information processing.

The world is all that is the case.

--- Ludwig Wittgenstein

Information is physical.

--- Rolf Landauer

It from bit.

--- John Archibald

Wheeler

Figure 2: Wittgenstein, Landaur, Wheeler

And I’ll just start with a few quotations that span the middle of the 20th century - from [**Ludwig**] **Wittgenstein** in the 1920s saying “The world is all that is the case,” so, defining the world in terms of facts, not objects;

Acknowledgements

- David S. Douglass (Active Inference Institute) 

Appendix: Terminology

Active Inference Active Inference is a Process Theory related to Free Energy Principle.

Inference Process of reaching a (local or global) conclusion within a Model, for example with Bayesian Inference.

Information Measured in bits, the reduction of Uncertainty on a Belief distribution of some type. Usually Syntactic (Shannon) but also can be Semantic (e.g. Bayesian).



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