



Mês de: MAIO 2012

SEMINÁRIO DE LÓGICA MATEMÁTICA

Dia 10 de Maio (quinta-feira), às 17h, na Sala A2-25

A Mathematical Logic Introduction to the Philosophy of Science.
Part II: ... And if the laws of physics turn to be non-algorithmic?

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Abstract:

We suggest that the Turing machine is a good model of a scientist, both in the task of monitoring (let us say) measurement experiments and in the task of establishing laws from those measurements, providing mathematical support of concepts in the philosophy of science.

In our model, once the observed phenomenon departs from pure randomness, a law can be Turing machine computed from observations, regardless the computable or non-computable character of the observed phenomenon. Then we suggest that the price of such derivations is the disunity of science, a generic non-unification theorem.

To state and prove the above mentioned results, we have included in our previous model of a scientist conducting an experiment some concepts of computational learning theory, generalising the known computational EXplanatory classes EX, EX^n and Behaviourally Correct classes BC and BC^n to non-computable functions.

Then we revisit Popper and Kuhn theses in the new PREDictive PRED-identification paradigm and prove our formulation to be sound with respect to a notorious case study in the history of science.

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