Topological models of intuitionistic logic

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Resumo: Mathematicians can prove the existence of an object in two ways: *non-constructive proofs* (without presenting the object) and *constructive proofs* (presenting the object). The majority of the mathematicians accepts both proofs (maybe favouring constructive proofs as they are more informative) and a minority of the mathematicians accepts only constructive proofs (mostly for philosophical reasons). In terms of logic, non-constructive proofs use *classical logic* (the usual logic in mathematics, which has the law of excluded middle) and constructive proofs use *intuitionistic logic* (which does not have the law of excluded middle).

We are proficient in working (showing that formulas are provable or unprovable) with classical logic but not with intuitionistic logic. Here *topology* comes to our help: there is a classical *correctness-completeness theorem* by Alfred Tarski, in the intersection of logic and topology, that assigns *topological models* to intuitionistic logic, in such a way that a formula is provable in intuitionistic logic if and only if the formula is true in all topological models.

In this talk we introduce the correctness-completeness theorem. We divide the talk into four parts:

- intuitionistic logic;
- topological models;
- correctness-completeness theorem;
- examples.

We keep this talk short, simple and sweet.

Palavras-chave: Topological model; intuitionistic logic; correctness-completeness theorem.