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SEMINÁRIO DE LÓGICA MATEMÁTICA

Dia 15 de Dezembro (sexta-feira), sala 6.2.33, às 15:00

On external sequences of nonstandard analysis

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Abstract:

We consider external sequences which are definable in the nonstandard axiomatics *IST* of Nelson. External sequences and also external functions have been avoided a long time, due to some obvious paradoxical properties, for example external continuous functions may have jumps. Still some external functions and sequences have very natural definitions, and can be used in modeling approximate or vague phenomena.
We present a representation theorem for external sequences, and show that definable external sequences tend to behave quite reasonably with respect to convergence. As for the latter, we introduce two types, one $\varepsilon -n_{0}$-like, and *strong convergence*, meaning that the sequence enters into the limit set within finite time. Such properties may also be defined for external finite sequences. The main result states that $\varepsilon -n_{0}$-like convergence implies strong convergence, with only one obvious exception. The proofs need a thorough foundational understanding of definable external sets.

(Joint work with Bruno Dinis, University of Lisbon, and Nam Van Tran, University of Danang, pole Kontum, Vietnam.)

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