CENTRO DE MATEMÁTICA E APLICAÇÕES FUNDAMENTAIS

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SEMINÁRIO DE LÓGICA MATEMÁTICA

Dia 22 de Maio (quinta-feira), às 15 horas, na Sala B3-01

Delineation of Harrington's forcing argument

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Abstract:

1. Harrington's forcing notion for a countable model $M = (\mathcal{M}, \mathcal{S})$ of the theory $\mathbf{RCA}_0$ of second-order arithmetic.
2. Generic filters for dense sets definable in M.
3. If $\mathbb{G}$ is a generic filter, then $G := \bigcap \mathbb{G}$ is an infinite path. $M[G] := (\mathcal{M}, \mathcal{S} \cup \{G\})$.
4. The language of forcing (with a new second-order constant C for the generic set G). The definition of forcing. Forcing is monotonous.
5. $T \Vdash \phi$ if , and only if, $\forall Q \leq T \exists R \leq Q \, (R \Vdash \phi)$.
6. Consequence: $\{T : T \Vdash \phi \text{ or } T \Vdash \neg\phi\}$ is dense.
7. *Truth lemma.* Let $\mathbb{G}$ be a generic filter. Then, $M[G] \models \phi(G)$ iff $\exists T \in \mathbb{G} \; T \Vdash \phi(C)$.
8. *Definability lemma.* $T \Vdash \phi(C)$ iff for all generic filters $\mathbb{G}$ such that $T \in \mathbb{G}$, $M[G] \models \phi(G)$.
9. If ϕ is a Σ_1 sentence of the forcing language, then $T \Vdash \phi$ is Σ_1.
10. $M[G] \models \mathrm{I}\Sigma_1$.

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