▸ TAKAKO NEMOTO, *Determinacy of Wadge classes in the Baire space and simple iteration of inductive definition.*

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In [2], we introduced determinacy schemata motivated by Wadge classes in descriptive set theory and investigated the strength of them in the Cantor space.

In this talk, we consider the strength of $\mathsf{Sep}(\Delta^0_2, \Sigma^0_2)$ determinacy, one of these determinacy schemata, in the Baire space, by comparison with Σ^1_1-TID (Σ^1_1 *Transfinite Inductive Definition*) defined as follows: For a given wellordering $(W, \prec)$ and a sequence $\langle \Psi_w : w \in W\rangle$ of Σ^1_1 operators along $(W, \prec)$, there exists a sequence $\langle Y^w : w \in W\rangle$ such that, for every $w \in W$, Y^w is a fixed point of Ψ_w starting from $\bigcup_{z \prec w} Y^z$. Here, Y is said to be a *fixed point of an operator* Ψ *starting from* $X \subseteq \mathbb{N}$ if there exist an ordinal γ and a sequence $\langle Y_\alpha : \alpha < \gamma\rangle$ such that

- $Y_0 = X$;
- $Y_\alpha = \bigcup_{\beta<\alpha} Y_\beta \cup \Psi(\bigcup_{\beta<\alpha} Y_\beta)$;
- $Y = \bigcup_{\alpha<\gamma} Y_\alpha$;
- $\Psi(Y) = Y$.

We prove that, over RCA_0, Σ^1_1-TID implies $\mathsf{Sep}(\Delta^0_2, \Sigma^0_2)$ determinacy, which asserts the determinacy of games equivalent both to $\Sigma^0_2 \wedge \Pi^0_2$ games and to $\Sigma^0_2 \vee \Pi^0_2$ games, in the Baire space. We also consider the converse.

[1] M. O. MedSalem and K. Tanaka, *Weak determinacy and iterations of inductive definitions*, ***Computational prospects of infinity Part II: Presented Talks***, Chitat Chong, Qi Feng, Theodore A Slaman, W Hugh Woodin and Yue Yang (eds.), Lecture Notes Series, Institute for Mathematical Sciences, National University of Singapore, vol. 15, World Scientific, 2008, pp. 333–354.

[2] T. Nemoto, *Determinacy of Wadge classes and subsystems of second order arithmetic*, ***Mathematical Logic Quarterly***, vol. 55 (2009), no. 2, pp. 154–176.

[3] S. G. Simpson, ***Subsystems of Second Order Arithmetic***, Perspectives in Mathematical Logic, Springer, 1999.

[4] K. Tanaka, *Weak axioms of determinacy and subsystems of analysis I: Δ^0_2-games*, ***Zeitschrift für Mathematische Logik und Grundlagen der Mathematik***, vol. 36 (1990), no. 6, pp. 481–491.