▸ IOANNIS SOULDATOS, *(Non)-Absolute Characterizations of Cardinals.*

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In [1], Hjorth proved that for every countable ordinal α, there exists a complete $\mathcal{L}_{\omega_1,\omega}$-sentence ϕ_α that has models of all cardinalities less than or equal to $\aleph_\alpha$, but no models of cardinality $\aleph_{\alpha+1}$. Unfortunately, his solution yields not one $\mathcal{L}_{\omega_1,\omega}$-sentence ϕ_α, but a set of $\mathcal{L}_{\omega_1,\omega}$-sentences, one of which is guaranteed to work.

The following is new: It is independent of the axioms of ZFC which of the Hjorth sentences works. More specifically, we isolate a diagonalization principle for functions from ω_1 to ω_1 which is a consequence of the *Bounded Proper Forcing Axiom* (BPFA) and then we use this principle to prove that Hjorth's solution to characterizing $\aleph_2$ in models of BPFA is different than in models of CH.

This raises the question whether Hjorth's result can be proved in an *absolute way* and what exactly this means, which we will discuss at the end of the talk.

This is joint work with Philipp Lücke.

References

[1] Greg Hjorth. Knight's model, its automorphism group, and characterizing the uncountable cardinals. *J. Math. Log.*, 2(1):113–144, 2002.

[2] Philipp Lücke, Ioannis Souldatos, A lower bound for the hanf number for joint embedding. https://arxiv.org/abs/2109.07310