

# KRIPKE PLATEK AND FRIENDS

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Starting point of this talk is the well-known system of Kripke-Platek set theory (with infinity). More precisely, I start off from the classical first order system KP and consider, in a first step, some of its class versions.

In these frameworks I will discuss several proof-theoretic aspects of fixed points and least fixed points of monotone  $\Sigma_1$  operators. On the more technical side, I am interested in their logical structure and their relationship to specific (and not so familiar) separation and replacement principles. This all leads us also to new reduction principles. Special attention will be paid to the roles of the axiom of constructibility and the axiom (Beta).

Theories of sets and classes around Kripke-Platek set theory – and thus much weaker than von Neumann-Bernays-Gödel set theory – are also very relevant from a conceptual point of view. In this context I am especially interested in questions about the size of classes in this context and how this discussion can open up a new perspective on some foundational questions. I will also study the role of strict  $\Pi_1^1$  reflection as a foundational principle.

I end this talk with presenting a series of – as I think – interesting and demanding open problems.

For some background reading you may have a look at Barwise [1] and Jäger-Steila [2].

## REFERENCES

- [1] J. Barwise. *Admissible Sets and Structures*. Springer, 1975.
- [2] G. Jäger and S. Steila. About some fixed point axioms and related principles in Kripke-Platek environments. *The Journal of Symbolic Logic*, 83/2, 642-668, 2018.

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