▶ AGATA TOMCZYK, *Sequent Calculus for non-Fregean topological Boolean theory WT*.
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The aim of the talk is to present sequent calculus $\mathsf{G3}_{\mathsf{WT}}$ for WT, one of axiomatic extensions of non-Fregean logic SCI. This talk concerns recent work regarding proof theory for non-Fregean logis; no proof systems for WT has been examined thus far. WT is inspired by the following proposition from Wittgenstein's *Tractatus*:

> 5.141 If p follows from q and q from p then they are one and the same proposition.

which can be interpreted as follows: two logically equivalent sentences constitute different variants of the same proposition. In WT identity connective '$\equiv$' is weakened. We add more valid equations than it was in the case of SCI; a given equation $\phi \equiv \chi$ is valid in WT provided $\phi \leftrightarrow \chi$ is valid in SCI. Moreover, $\phi \equiv \chi$ can be translated to modal logic $\mathsf{S4}$ as $\Box(\phi \leftrightarrow \chi)$, where necessity operator $\Box$ can be interpreted as an interior operator on the Boolean algebra of situations. We will examine $\mathsf{G3}_{\mathsf{WT}}$, which is based on the left-sided sequent calculus $\ell\mathsf{G3}_{\mathsf{SCI}}$ proposed in [1]. In $\mathsf{G3}_{\mathsf{WT}}$ we combine Negri's strategy of turning axioms into sequent calculus rules along with strategy of translating consequence operation properties into sequent calculus rules. We will discuss completeness and soundness of $\mathsf{G3}_{\mathsf{WT}}$ with respect to topological Boolean algebra as well as point to limitations (and sources) regarding cut elimination procedure.

[1] Szymon Chlebowski, *Sequent Calculi for SCI*, ***Studia Logica***, vol. 106 (2018), no. 3, pp. 541–563.

[2] Roman Suszko, *Abolition of the Fregean Axiom*, ***Lecture Notes in Mathematics***, vol. 453 (1975), pp. 169–239.

[3] Roman Suszko, *Identity Connective and Modality*, ***Studia Logica***, vol. 27 (1971), no. 1, pp. 7–39.

[4] Ludwig Wittgenstein, ***Tractatus Logico-Philosophicus*** , Routledge, 2013.