Dialectica categories and doctrines

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April 27, 2023

More than thirty years ago my doctoral work introduced the first categorical internalisation of Godel's celebrated Dialectica Interpretation. Since then many new applications of the Dialectica categorical constructions have come to light, especially in relation to linear logic and games. Recently work with Davide Trotta and Matteo Spadetto, based on Rosolini and Maietti's ideas, made it clear how to connect the work in Dialectica categories to Lawvere's fundamental insights into categorical logic. I want to discuss these new developments, showing how the very tight categorical modelling of the Dialectica using doctrines, exactly explains the proof-theoretical constraints.

Bibliography

1. Davide Trotta, Matteo Spadetto, Valeria de Paiva (2023). Dialectica Principles via Gödel Doctrines. In Theoretical Computer Science.

2. Davide Trotta, Matteo Spadetto, Valeria de Paiva (2022). Dialectica logical principles: not only rules. In Journal of Logic and Computation.