80-514/814: Introduction to Categorical Logic

Topics for Student Presentations / Reports

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1. Lawvere Duality:

   - Adamek, Lawvere, Rosicky, On the duality between varieties and algebraic theories, Algebra Universalis, 2003.

2. Gabriel-Ulmer duality:

   - Makkai, Pitts, Some results on locally finitely presentable categories, Transactions of the AMS 1987.

3. H-Sets are reguar / coherent / topos:

   - van Oosten, Basic Category Theory, 2002.

   - M.P. Fourman and D.S. Scott. Sheaves and logic. In: Applications of sheaves, edited by Fourman, Mulvey, Scott, Lecture notes in mathematics, 753, Springer, 1979, pp. 302–401.

   - Topoi and categories of fuzzy sets, Lawrence Neff Stout, Fuzzy Sets and Systems, February 1984, pp.169–184

4. Exact categories / exact completions:

   - Carboni and Vitali, Regular and exact completions, Journal of Pure and Applied Algebra, March 1998, pp. 79–116.

   - Carboni and Rosolini, Locally cartesian closed exact completions, Journal of Pure and Applied Algebra, December 2000, pp. 103–116.

5. Hyperdoctrines:

- F.W. Lawvere, Equality in hyperdoctrines and comprehension schema as an adjoint functor, Proceedings of the AMS Symposium on Pure Mathematics XVII (1970), 1–14.

- R.A.G. Seely, Hyperdoctrines, natural deduction, and the Beck condition, Zeitschrift für math. Logik und Grundlagen der Math., Band 29, 505–542 (1983).

6. Bi-Heyting logic:

   - F.W. Lawvere, Intrinsic Co-Heyting Boundaries and the Leibniz Rule in Certain Toposes, in A. Carboni, M. Pedicchio, G. Rosolini (eds.), Category Theory - Como 1990, LNM 1488 Springer Heidelberg 1991.

   - Gonzalo E. Reyes, Houman Zolfaghari, Bi-Heyting Algebras, Toposes and Modalities , J. Phi. Logic 25 (1996) pp. 25–43.

7. Completeness via Joyal's embedding theorem:

   - M. Makkai and G. Reyes, Completeness results for intuitionistic and modal logic in a categorical setting, Annals of Pure and Applied Logic, Volume 72, Issue 1, 10 March 1995, Pages 25–101

8. Set-valued completeness for regular theories, classical completeness for Boolean theories:

   - P.T. Johnstone, Sketches of an Elephant, section D1.5.

9. Lambda-calculus and CCC (cartesian closed categories):

   - D.S. Scott. Relating theories of the λ-calculus. In R. Hindley and J. Seldin, editors, To H.B. Curry: Essays in Combinatory Logic, Lambda Calculus and Formalisms, pp. 403–450. Academic Press, 1980.

   - D.S. Scott, Lambda Calculus: Some Models, Some Philosophy, Studies in Logic and the Foundations of Mathematics, Volume 101, 1980, pp. 223–265

10. Dependent type theory and LCCC (locally cartesian closed categories):

    - R. A. G. Seely. Locally cartesian closed categories and type theory. Math. Proc. Camb. Phil. Soc., 95:33-48, 1984.