Syllabus for the seminar "Logarithmic Geometry" 0366-4349 (2023-24, Spring semester)

Prof. E. Shustin

(1) The Geometry of Monoids: Basics on monoids. Finiteness, convexity, and duality. Affine toric varieties. Actions and homomorphisms.

(2) Sheaves of Monoids: Monoidal spaces. Charts and coherence.

(3) Logarithmic Schemes: Log structures and log schemes. Morphisms of log schemes.

(4) Differentials and Smoothness: Derivations and differentials. Thickenings and deformations. Logarithmic smoothness. Logarithmic flatness.

(5) Betti and de Rham Cohomology: Betti realizations of log schemes. The de Rham complex. Analytic de Rham cohomology. Algebraic de Rham cohomology

Prerequisites: Algebra B-3, Algebraic Geometry I, II

Bibliography:

Ogus A. Lectures on logarithmic algebraic geometry. Cambridge Univ. Press, 2018. D. Abramovich and Q. Chen. Stable logarithmic maps to Deligne-Faltings pairs II. Asian J. Math. 18 (2014), no. 3, 465--488.

M. Temkin. Introduction to logarithmic geometry. Preprint at arXiv:2209.11976.