

A proposal of M2 thesis by Alexandru Dimca

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Title : Moduli spaces for line arrangements

Abstract : The aim of this project is to construct algebraic varieties parametrizing the set of line arrangements in the complex projective plane \mathbb{P}^2 with a fixed combinatorics, as in the papers [1, 2, 4, 5] listed below. The connectivity of such moduli spaces is related to major open questions in the theory of hyperplane arrangements, concerning the monodromy of the Milnor fibers and Terao conjecture on free arrangements, see [3] for details. The first step would be to understand certain parts of the paper [4].

Some familiarity with basic Algebraic Geometry would be useful.

References

- [1] M. Amram, M. Cohen, M. Teicher, F. Ye, *Moduli spaces of ten-line arrangements with double and triple points*, arXiv:1306.6105.
- [2] M. Amram, M. Teicher, F. Ye, *Moduli spaces of arrangements of 10 projective lines with quadruple points*, Adv. in Appl. Math., 51 (2013), 392–418.
- [3] A. Dimca, *Hyperplane Arrangements: An Introduction*, Universitext, Springer, 2017.
- [4] A. Dimca, D. Ibadula, A. Măcinic, *Numerical invariants and moduli spaces for line arrangements*, arXiv:1609.06551.
- [5] S. Nazir, M. Yoshinaga, *On the connectivity of the realization spaces of line arrangements*, Ann. Scuola Norm. Sup. Pisa **XI** (2012), 921–937.