

# Alexander polynomials and characteristic varieties of arrangements

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## SUMMARY

There have been various definitions of the Alexander invariants of a knot. Following some of these definitions one can generalise them so as to have coefficients twisted by a linear representation. The Alexander type invariants are known to detect non-trivial topological information (genus, hyperbolic volume of a knot etc). The twisted Alexander polynomial was introduced by Wada for knots and has been studied thereafter for more general manifolds as the complement of algebraic curves or line arrangements. We will discuss the relation of the twisted Alexander polynomial of the exterior manifold of a line arrangement and the twisted Alexander polynomial of its boundary manifold.

We will also deal with the characteristic varieties of line arrangements, studied by various authors such as Zariski, Libgober, Artal. The main problem is to understand if the characteristic varieties are combinatorially determined in general. This is known to be true for their homogeneous part, which corresponds to the resonance variety, as well as for the translated components having dimension at least one, as they are determined by orbifold pencils. This does not work in the same way for the 0-dimensional translated components. Here we present examples such that the characteristic variety has some translated 0-dimensional global component.

**AMS Classification:** 57M05, 57Q10, 58K65, 14H30, 14B05, 55N33

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