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Nearby cycles and Alexander modules of hypersurface complements

Yongqiang Liu[1]

Assume that f is a reduced polynomial and generic at infinity. Then f=0 defines a hypersurface. Using an explicit construction, we show that the Alexander modules of hypersurface complements (up to middle degree) are torsion, semisimple, and they have mixed Hodge structures. Moreover, we realize these Alexander modules by nearby cycles. As an application, we give the divisibility results for these Alexander modules.

[1]KU Leuven
yongqiang.liu@kuleuven.be