

The monodromy problem for hyperelliptic curves

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We study the Dynkin diagram associated with the monodromy of direct sums of polynomials. The monodromy problem asks under which conditions on a polynomial, the monodromy of a vanishing cycle generates the whole homology of a regular fiber. We consider the case $y^4 + g(x)$, which is a generalization of the results of Christopher and Mardešić about the monodromy problem for hyperelliptic curves. Moreover, We solve the monodromy problem for direct sums of fourth degree polynomials.