

MONODROMÍA GEOMÉTRICA EN FAMILIAS DE CURVAS DE GÉNERO 4

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ABSTRACT. The geometric monodromy of a family of complex projective curves is equivalent to the monodromy in the fundamental group of the fibers. When the family is one of branched covers of the projective line this monodromy is determined by the braid monodromy of the branching divisor formed by the branching values varying over the base.

We present a computational scheme for finding the global braid monodromy of a branching divisor $R \subset \mathbb{C}^2$ with respect to the vertical projection $\pi(x, y) = x$, based on numerical integration of a related differential equation. It has been implemented in MATLAB, and computes such monodromies for curves R up to degree 6 so far.

Our goal is the case of families of surfaces of genus 4, which are trigonal covers of the Riemann sphere generically branched in 12 points. A Singular library has been developed for the computation of the equation of the branching divisor R in families of genus 4 surfaces over \mathbb{C} from their canonical equations. It is followed by a computation with pari-gp of the branching values of the divisor R with respect to the vertical projection, furnishing the starting data for the above braid monodromy computation in the family, albeit the relative degree of the curve is now 12.

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