

# Symmetries of planar algebraic curves

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We present the novel algorithm to compute the symmetries of a planar algebraic curve given by the implicit equation. The method is based on the well known fact that the Laplacian operator commutes with the orthogonal transformations. This reduces the study of symmetries of an algebraic curve to the study of the symmetries of the associated harmonic curve. Using the observation that these curves are closely related to complex univariate polynomials, we are able to provide the possible center of rotation and the directions of axes by elementary methods. In advance we will apply the presented method to the detection of similarities between two curves as well.

**Joint work with:** Juan Gérardo Alcázar , Miroslav Lávička.