

A Comparative Study of a Few Tests for Isomorphism in Planetary Gear Trains

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Abstract

Graph theory and Matrix methods are widely used by various kinematicians for synthesis and analysis of PGTs. Characteristic polynomial coefficients are used to detect isomorphism in Planetary Gear Trains (PGT). With the Eigen values and Eigen vectors method multiple matrix calculations are required. In case of Hamming number method a single Hamming matrix is enough to detect isomorphism in two PGTs and also determine structural aspects like symmetry easily [1]. Further using the Hamming matrix for a PGT, the number of possible combinations of levels that can be assigned to a given PGT [2] is identified. A review and comparison of Characteristic polynomial, Eigen vectors and Eigen value and Hamming number methods is presented.

Keywords: characteristic polynomial, Eigen values, hamming number, row transformation matrix

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