

1048-14-74

Jose Antonio Vargas* (javargas1@excite.com), Constitucion 204, centro, 68000 Oaxaca, Oaxaca, Mexico. *The infancy of trilinear algebra.*

Let V be a vector space of dimension $n+1$ over the complex field. The group $G = PGL_{n+1}$ acts on $\mathbb{P}(V \otimes V \otimes V)$, identified with the projective space of matrices of linear forms on the variables x_0, \dots, x_n , naturally: By conjugation followed by a linear change of variables. We call this the triple action.

We call “trilinear algebra” the study of this action. This subject is in its infancy; and we propose as an underlying ground the study of a discrete dynamical system associated to any given matrix of linear forms, in order to obtain invariants and canonical forms for the original matrix.

Our dynamical systems are originated by the iteration of quadratic rational maps of projective space \mathbb{P}^n . The group G also acts by conjugation on the projective space of these maps. These actions are related by a surjective concomitant map.

We identify the discrete and continuous components of the problem for some orbits of the triple action. We obtain some canonical forms for these cases. The discrete invariants are given by geometric configurations involving toric varieties. The main continuous invariants are interpreted as speeds of convergence along different directions. (Received February 03, 2009)