

1096-VM-2527      **Bernd Sing\*** ([bernd.sing@cavehill.uwi.edu](mailto:bernd.sing@cavehill.uwi.edu)), Department of Mathematics, The University of the West Indies, Cave Hill, P.O. Box 64, Bridgetown, St Michael BB11000, Barbados. *On some 3-way transportation polytopes*. Preliminary report.

In this report we are interested in the axial 3-way transportation polytopes that arise as the feasible non-negative integer points of  $2 \times 2 \times 2$  contingency tables with given 1-marginals. In particular, we explore the following connection between these (in this case) 4-dimensional polygons and the universal Gröbner basis of the associated constraint matrix  $A$ : A relatively prime vector  $\mathbf{u} \in \ker(A)$  lies in the universal Gröbner basis iff the line segment  $[\mathbf{u}^+, \mathbf{u}^-]$  is an edge of the transportation polytope with vector of marginals  $A\mathbf{u}^+$  (Theorem 7.8 in “Gröbner Bases and Convex Polytopes” by B. Sturmfels). Preliminary results for 4-way transportation polytopes of  $2 \times 2 \times 2 \times 2$  arrays are also presented. (Received September 17, 2013)