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Fatemeh Mohammadi* (fatemeh.mohammadi@ist.ac.at), 10623 Berlin, Germany, **Maria Kateri** (maria.kateri@rwth-aachen.de), 52056 Aachen, Germany, and **Bernd Sturmfels** (bernd@berkeley.edu), Berkeley, CA 94720. *A Family of Quasisymmetry Models.*

Abstract: We present a one-parameter family of statistical models for square contingency tables that interpolates between the classical quasisymmetry model and its Pearsonian analogue. Thus there more options available for data analysis of square contingency table. The more interesting practical application lies in analysing and comparing independent square tables of the same set-up, when they cannot be modeled adequately all by the same (classical or Pearsonian) QS model.

Algebraically, this corresponds to deformations of toric ideals associated with graphs. We show that these models belong to a broader class of ϕ -divergence QS models. Measures of divergence quantify the distance between two probability distribution. Our discussion of the statistical issues centers around maximum likelihood estimation. (Received August 10, 2015)