1057-62-257 **Hisayuki Hara** (hara@tmi.t.u-tokyo.ac.jp), **Tomonari Sei** (sei@stat.t.u-tokyo.ac.jp) and **Akimichi Takemura*** (takemura@stat.t.u-tokyo.ac.jp), 7-3-1 Hongo Bunkyo-ku, Tokyo, 113-8656, Japan. *Hierarchical subspace models for contingency tables.*

Modeling of the interaction term of log-affine models is an important topic for contingency tables and many models have been considered especially for low dimensional contingency tables.

We introduce the notion of hierarchical subspaces model (HSM) and give a unified treatment of these models as submodels of hierarchical models. This approach provides parsimonious models with smaller degrees of freedom than the usual hierarchical model, while preserving conditional independence structures in the hierarchical model. Then the inference is localized in the same way as the hierarchical model. HSM also provides an extension of the models defined for low dimensional contingency tables to the models for multiway contingency tables.

We also discuss maximum likelihood estimation and exact tests by using Markov bases of the proposed models and illustrate the advantage of the proposed modeling with some data sets. (Received January 24, 2010)