

# On palindromic Ising models with graph structure

Nanny Wermuth<sup>1,2</sup>

<sup>1</sup>*Chalmers University of Technology, Sweden, wermuth@chalmers.se,*

<sup>2</sup>*Gutenberg University, Mainz, Germany*

An example of a palindromic sentence which respects the spacings between words is 'step on no pets': it gives the same sentence when read in reverse order. This notion has now been applied to Bernoulli distributions, which are then characterised by having no odd-order interactions, no matter whether these are of the linear, log-linear or multivariate logistic type.

For Ising models with this structure, there are no main effects and at most two factor log-linear interactions so that the vanishing of such a term shows just as in joint Gaussian distributions in the concentration matrix, that is in their inverse covariance matrix. In this lecture, I concentrate on additional features which arise especially when their concentration graphs have simplified structure.

The results are based on [1] and [2] which are to appear.

## References

- [1] Marchetti, G.M. and Wermuth, N. (2016). Palindromic Bernoulli distributions. *Electronic Journal of Statistics (to appear)*.
- [2] Fallat, S., Lauritzen, S., Sadeghi, K., Uhler, C., Wermuth, N., Zwiernik, P. (2016). Total positivity in Markov structures. *The Annals of Statistics (to appear)*.