# Old and New Techniques for Empirical Processes of Dependent Data

Herold Dehling

Ruhr University Bochum

Throughout his entire career, Walter Philipp has made significant contributions to empirical process theory, both for independent as well as for dependent data. In the first part of our talk we will give a survey of some of this work. In the second part, we will introduce some new techniques for proving empirical process invariance principles for stationary processes $(X_n)_{n\geq 0}$. The novelty of our approach lies in the fact that we only require the central limit theorem and a moment bound for a restricted class of functions $(f(X_n))_{n\geq 0}$, not including the indicator functions. Our approach can be applied to Markov chains and dynamical systems, using spectral properties of the transfer operator. This is joint work with Olivier Durieu and Dalibor Volny.

## References

Herold Dehling, Olivier Durieu and Dalibor Volny: New Techniques for Empirical Processes of Dependent Data. arXiv:0806.2941v2 [math.PR]

Herold Dehling and Walter Philipp: Empirical Process Techniques for Dependent Data. in: H. G. Dehling, T. Mikosch and M. Sorensen (eds.), *Empirical Process Techniques for Dependent Data.* Birkhäuser, Boston, 3–111 (2002).