CARL VON OSSIETZKY universität OLDENBURG
FAKULTÄT V
MATHEMATIK UND NATURWISSENSCHAFTEN

**Institut für Physik**

# Theoriekolloquium

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Am **2. November 2017** um **14.15 Uhr** in **W2 1-143** hält

**Herr Prof. Dr. Peter F. Stadler (Leipzig)**

einen Vortrag mit dem Titel

## Statistical Thermodynamics of RNA Secondary Structures

RNA Secondary Structure play a special role in structural biology because, despite being a simple discrete model, they are a surprisingly good quantitative approximation to the behavior of nucleic acids. This allows detailed prediction not only about their behavior in general, but also make it possible to make detailed and quite accurate statements about specific RNA and DNA sequences. This makes the model extremely useful for real-life applications in the life sciences. The key point is the fact that the RNA folding problem can be solved by dynamic programming. As a consequence, exact algorithms with polynomial running time can be obtained to compute partition functions of ensembles of RNA structures. This not only solved the folding problem, but provides easy access to good approximation of the energy landscape and RNA and thus its folding dynamics. Considering restricted ensembles of secondary structures, furthermore makes it possible to consider RNA-RNA, RNA-protein, and RNA-small molecule interactions in detail. In the presentation, I will give an overview of the underlying theory and discuss several practical applications.

Interessierte sind herzlich eingeladen.

gez. Prof. Dr. Alexander Hartmann