



KOLLOQUIUM

Institut für Elektrotechnik, Elektronik und Informationstechnik

On Hybridization and Self-Hybridization

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Cauerstraße 7/9, Hörsaal H5

Diskussionsleitung: Prof. Dr. J. Huber

There exist no biological processes that are easier to describe, but yet more versatile and complex to analyze in terms of their regulating power, than DNA and RNA hybridization and self-hybridization. DNA and RNA hybridization and self-hybridization refer to binding properties between Watson-Crick complementary bases on two different or within the same sequence, respectively. These binding patterns are closely tied to the sequence's functionality, and very frequently, important cell features such as RNA re-encoding, regulatory DNA binding and chromosome fragility can be directly associated with the hybridization form of the underlying sequences.

In this talk, we first discuss some important properties of DNA hybridization and RNA folding (i.e. self-hybridization) as they appear in living cells. We then proceed to discuss potential applications of DNA/RNA hybridization techniques to emerging computing and communication systems, including DNA computers and DNA cryptographic systems based on DNA microarrays. We conclude the talk by describing several coding and information-theoretic problems arising in the study of hybridization and folding, such as DNA code design and enumeration of RNA folding patterns.