THE PHYSICS COLLOQUIUM

Thursday 20 APRIL 2023, 4:00 p.m.
Nijenborgh 4, **Lecture Hall 5111.0080**

Information processing during gene regulation

Marianne Bauer

TU Delft

Cells express genes in order to respond to environmental changes, differentiate or decide their fates, and develop into a healthy organism. Gene expression is regulated by cues, such as changing transcription factor concentrations, whose concentrations are often low.

This expression in response to a changing concentration can be viewed as a type of decision that can be analyzed in terms of an information-theoretic framework.

In this talk, I will show, on the example of early fly embryo development, how such an information-theoretic inference approach can help us understand features of a complex transcriptional apparatus that may be difficult to model, due to the complexity of the contributing regulatory factors.

I will compare the inferred optimal sensor to realistic, microscopic models for regions on the DNA that respond to transcription factors, and, finally, relate their architecture to features commonly found in efficient computing systems.

Join us for coffee starting 3:30 p.m. Refreshments will be served after the lecture.
For more information contact the host: Rifka Vlijm (r.vlijm@rug.nl)
Website: http://www.rug.nl/research/vsi/colloquia/