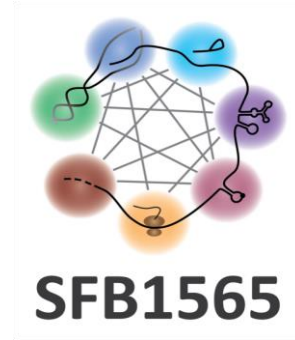


SFB1565 Seminar



Special Seminar of the Third Institute of Physics – Biophysics

Prof. Dr. Gilad Haran

Weizmann Institute, Rehovot, Israel

The Secret Ultrafast Motions of Protein Nanomachines

Single-molecule FRET spectroscopy (smFRET) is a powerful tool to study the internal movements of protein machines during their activity. Gilad Haran and his team have used this method to study the dynamics of various proteins. A general paradigm seems to emerge from these studies, which will be presented in his talk.

15 May 2024, Wednesday, 12:15 PM

Lecture Hall HS5

Physics Dept. Bldg.

Hosted by Prof. Dr. Jörg Enderlein

Special Seminar of the Third Institute of Physics – Biophysics
Wednesday, May 15, 2024, 12:15 PM, Lecture Hall HS5
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**The Secret Ultrafast Motions of
Protein Nanomachines**

Gilad Haran

Weizmann Institute, Rehovot, Israel



Multiple proteins function as nanomachines, alternating chemical steps with conformational transitions. Single-molecule FRET (smFRET) spectroscopy is a powerful tool to study the internal motions of protein machines during activity. We have used this capability to probe the dynamics of several proteins.

A general paradigm, based on two time scales, seems to arise from these studies. Structural fluctuations take place on very short time scales, down to microseconds, while the (chemical) activity cycles of these machines are much slower. Nevertheless, a mechanistic connection can be found between the two types of dynamics.

Biographical sketch

Gilad Haran did his graduate studies in medical science at the medical school of the Hebrew University of Jerusalem and completed the degree summa cum laude (1986). He then started working as a research assistant to Prof. Hezi Barenholz at the Hebrew University. At this time, he took part in the development of the first nanomedicine ever, Doxyl. In 1988 Haran started his doctoral studies at the Weizmann Institute of Science under the supervision of Ephraim Katzir (a former President of Israel) and Elisha Haas. His dissertation (1993) discussed the dynamics of the conformation of polypeptides and proteins. During the next years, he was a post-doctoral fellow in the department of Chemistry of University of Pennsylvania with Robin M. Hochstrasser. He was working on ultrafast spectroscopy of reaction dynamics in proteins and fluids. Upon his coming back to Israel in 1998, he joined as a senior lecturer at the department of chemical physics at the Weizmann Institute. In 2005 he was appointed an associate professor and, in 2011, a full professor. In 2007–2011 he served as the head of the board of Chemistry at the Feinberg Graduate School. In 2012, Haran was appointed the 11th dean of the Faculty of Chemistry and served six years in this post.