

中国科学院数学与系统科学研究院

量子论与信息论

学术报告

报告题目: The Scientific and Technological Promise of Quantum Biology

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时 间: 2023 年 11 月 2 日 (星期四) 下午 14:30--15:30

地 点: 数学与系统科学研究院 南楼 N620

摘要: In this talk I will introduce quantum biology, the synthesis of modern quantum science & technology with biological systems. As a specific paradigm of this synthesis, I will describe biological quantum sensing using radical-pair reactions, and discuss why such biochemical magnetometers ideally demonstrate the premise of quantum biology. In short, because they realize quantum measurement dynamics, and further, they require measures of quantum coherence for their understanding. I will then present recent work pushing the study of quantum biological effects into the cellular environment. This is achieved by using a fundamental quantum-information concept, the Wigner-Yanase information. We arrive at a sort of “quantum biological uncertainty relation”, which connects the product of a biological resource and a biological figure of merit, with a measure of coherence based on the Wigner-Yanase information. Finally, I will discuss the general scientific and technological outlook of the synthesis quantum+bio.