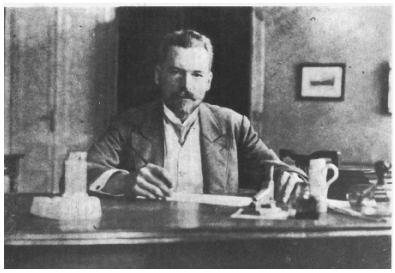

Contribution ID: **49** Type: **Talk**

Non-Hermitean and Zeno limit of the quantum first detection problem

Thursday, September 19, 2019 3:00 PM (30 minutes)

The classical first-passage theory for random walks is generalized to quantum systems by using repeated attempts with a fixed frequency $1/\tau$ to find the system in the detection state $|\psi_{\mathrm{d}}\rangle$. The first successful of these attempts defines the time $T = N\tau$ of first *detected* arrival. Here, the Zeno limit $\tau \to 0$ of diverging detection frequency is investigated. The repeated detection setup is compared with a non-Hermitean Schrödinger equation. Using an electrostatic analogy we can determine all absorbtion modes in the Zeno limit and find the pdf as well as all moments of T for systems with a discrete energy spectrum. The pdf has a scaling form in τ. Applying known results from the repeated detection setup to the non-Hermitean equation shows that the mean dissipation time in the latter system is quantized.

Summary

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