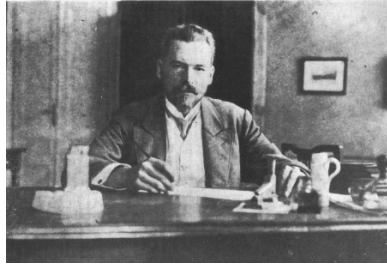


# 36th M. Smoluchowski Symposium on Statistical Physics: Soft Matter, Information Processing and Nonequilibrium Fluctuations



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## Nonconservative diffusion processes

*Thursday, 28 September 2023 09:50 (25 minutes)*

We analyze pros and cons of the recently introduced theoretical framework, within which the dynamics of nonequilibrium diffusion processes is related to the fully Euclidean version of the Schrödinger quantum mechanics with a minimal electromagnetic coupling. The arising “magnetic” affinity is set against the standard theory of the Brownian motion in a magnetic field. The benefit is that the existing exact formulas for transition probability density functions of the involved Markovian diffusion processes, can be mapped into their (merely formal) path integral counterparts in the non-Hermitian setting of [Phys. Rev. E 107, 014101, (2023)]. This allows to discriminate between the standard Brownian magnetic lore and potentially useful electromagnetic analogies appearing in the study of nonconservative diffusion processes, which do not necessarily embody the very concept of electromagnetic perturbations of diffusing charged particles, but extend far beyond this setting.

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