

**Kozyrev, S. V.; Volovich, I. V.**

**The Arrhenius formula in kinetic theory and Witten's spectral asymptotics.** (English)

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Summary: A new approach to the proof of the Arrhenius formula of kinetic theory is proposed. We prove this formula by starting from the equation of diffusion in a potential. We put this diffusion equation in the form of evolutionary equation generated by some Schrödinger operator. We show that the Arrhenius formula for the rate of the over-barrier transitions follows from the formula for the rate of quantum tunnel transitions for the considered Schrödinger operator. The relation of the proposed approach and the Witten method of the proof of the Morse inequalities is discussed. In our approach, the Witten spectral asymptotics takes the form of the low-temperature limit and the Arrhenius formula is a correction to the Witten asymptotics.

**MSC:**

**82C24** Interface problems; diffusion-limited aggregation in time-dependent statistical mechanics

**81S10** Geometry and quantization, symplectic methods

Cited in **1** Document

**Full Text:** [DOI](#) [arXiv](#)