

Casimir research interests

The main research interests of our group in the context of the Casimir effect is currently focussed on the geometry dependence of the Casimir force, using worldline numerics as a new and powerful quantum-field-theoretic tool. We are particularly interested in experimentally relevant configurations, such as the sphere-above-plate configuration, micro- and nano-structured surfaces, and the influence of corners and edges on the Casimir force. Furthermore, the interplay between geometry and finite temperature is of topical interest for a proper understanding of experimental results; moreover, the underlying spectral theory for quantum and thermal fluctuations in open geometries represents an unknown territory and requires a careful field-theoretic exploration which we are aiming at with modern worldline methods.

Holger Gies

Emmy-Noether research group “Quantum fluctuations and quantum vacua”

Institute for Theoretical Physics, Heidelberg University