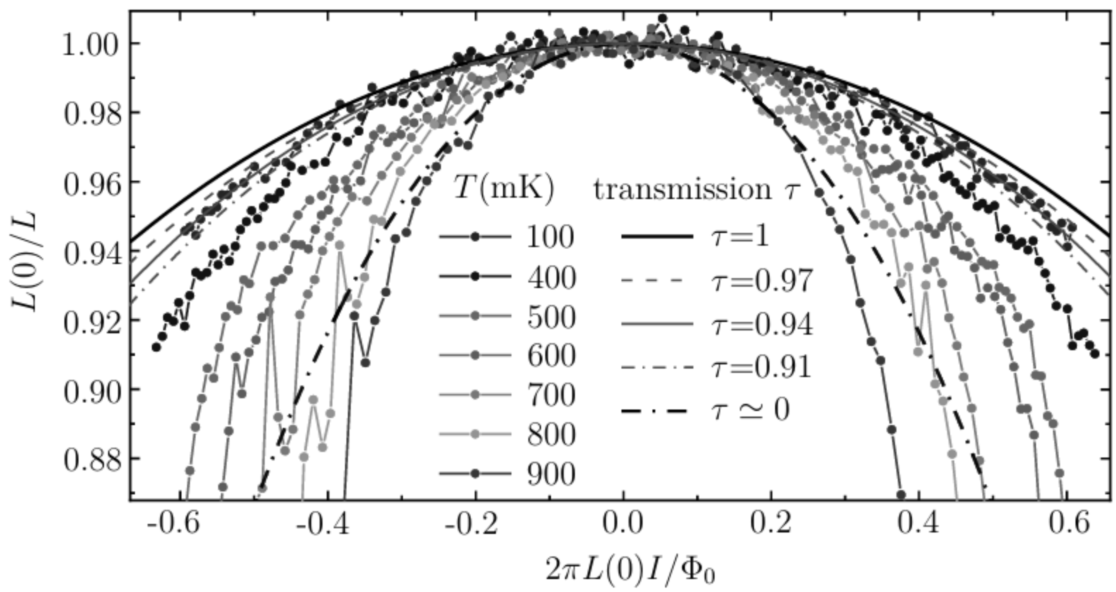
Tensors, Gravitational Waves, and Higher Dimensions in Black Holes: Theoretical Exploration and Applications of Josephson Junctions in Zeeman and Spin-Orbit Field:



The Circuit into the topological space A(dimensional-symmetric circuit in black holes/binaries)
The corresponding zero-bias part L0 of the L(I) curves is presented in Fig. For both samples, L0 increases steadily and shows a plateau around By ≃+200 mT, which reflects the observed accumulation of the L(I) curves. This plateau appears in a specific By range, exactly when the Zeeman energy Ez and the via L0 calculated induced gap Δ∗ coincide. If we assume that By affects the CPR solely via the induced order parameter Δ∗(By), we can extract the variation the induced gap Δ∗ as a function of By from L0

The sinusoidal CPR (f′(ϕ) = 1) in order to use the simple relation 2EJ = 2Φ0I0/2π = EA. The result is a rough match up to a factor of ≃2 and the angle dependence of EA and 2EJ matches very well. A possible reason for the deviation is the non-sinusoidal shape of the CPR circuitry models.

Optical analog models 'Black Holes' in Laboratories 375 When the light is propagating in an inhomogeneous media with a refractive index n > 1 its velocity c/n is less than the velocity of light in the vacuum. One can describe this propagation by introducing neffectivemetric7 dependent on n(x). To describe the last stage of the binary evolution numerical relativity is required. The numerical calculations performed demonstrated the existence of the kick effect and determined its characteristics. In particular, it was demonstrated that the gravitational radiation;

The origin of the effective curve in terms of metric in the acoustic analog model comes from the equation for propagation of sound. The flow of fluid that is potential [∇×v=0], the modulation of the critical current and inductance by an external magnetic field acting on the array out-of-plane. The magnetic flux penetration into the Josephson junction leads to quantum interference that causes a variation of the supercurrent. The3-velocity of the fluid may depend on the space and time coordinates.For the irrotational flow the sound waves,which correspond to the perturbations of the velocity δv above the background flow, canbedescribedbyapotentialφsuchthatδv=∇ φ.The wave equation for the propagation of phonons is ∂ ∂t +∇ ·v ρ c2 s ∂ ∂t +∇ ·v φ=∇ ·(ρ∇ φ)

Elementary particles, which are quantum objects, are approximated by classical point likemasses. • The energy of the collision is high enough to create a black hole with the mass m, so that such a black hole is a classical object quantum gravity corrections are not important. • The cross-section of the black hole formation is estimated by the area of the apparent horizon. The null-energy condition and the Penrosehypothesis of cosmic censorship are assumed, so that a trapped surface is inside the black hole. The surface area of the trapped surface gives the lower limit for the cross-section. • The tension of the brain,representing our 4D world, is small. Its gravitational field and its influence on the micro-black holes are neglected.

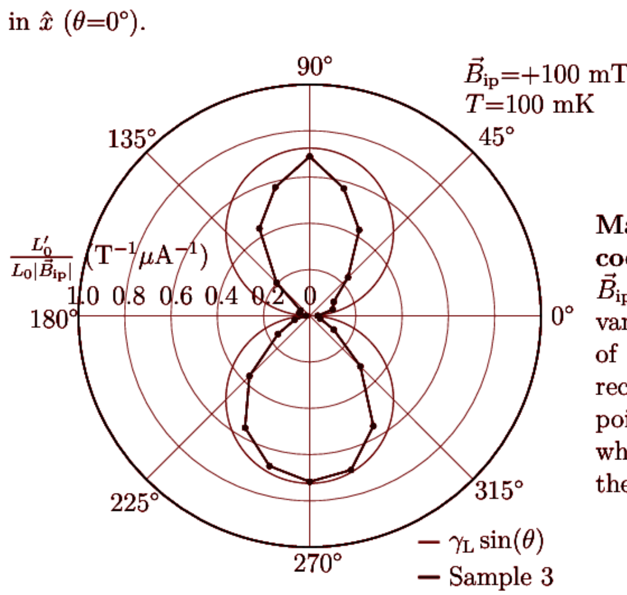
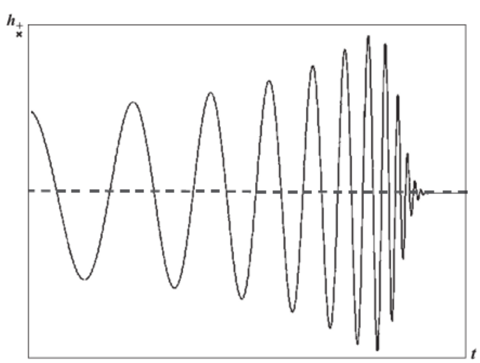


Figure 6.3

Magnetochiral anistropy coefficient γ_L: Measured at $\vec{B}_{ip}$=+100 mT for sample 3 for various angles θ. A difference of the absolute values of γ_L is recognisable between the red data points and the blue sine curve, which emphasises the breaking of the C_{2v} symmetry.



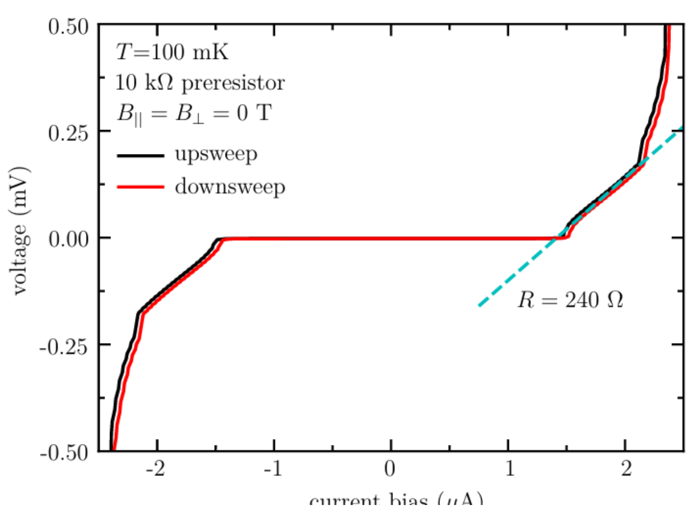
The acoustic analog gravity is only one example among a variety of analog gravity models. Other models can be either classical or quantum. An incomplete list of them includes • classical acoustics; • water waves; • emergent spacetime in quantum liquids like superfluid 3He and 4He; • emergent spacetime in Bose–Einstein condensates (BEC); • classical and quantum optics; • slow light.
In this observation is a difference of the absolute values between γL(θ = 90◦) and γL(θ = 270◦)

Radiation:

As we already stressed, astrophysical black holes are the most powerful engines in the universe. Up to 42% of the proper mass of the accretion onto the extremal Kerr black Black Holes and Search for Gravitational Waves 363 hole can be transformed into the energy of radiation. Only Annihilation of matter and antimatter produces more energy. So far we discussed mainly the action of black holes on particle motion and light propagation. Let Us Discuss now gravitational waves generation systems that contain a black hole. This subject is of high interest in connection with the search of gravitational waves by recently constructed gravitational-wave detectors and exciting plans to develop gravitational-wave astrophysics. Close Binaries Natural Objects for the search of stellar-mass black holes. The main 'signal', indicating that such a system contains compact objects with strong gravity, comes from observation ofX-and gamma-radiation. **Circuit C2v:** C2v-symmetry, which is there reflected in the critical currents. A plausible explanation of a breaking of the C2v-symmetry R(T) using standard low-frequency, 75 ms at 21 Hz and a 1 MΩ preresistor defining 20 nA current bias, we obtained R(T) at⃗ Bip=+90 mT

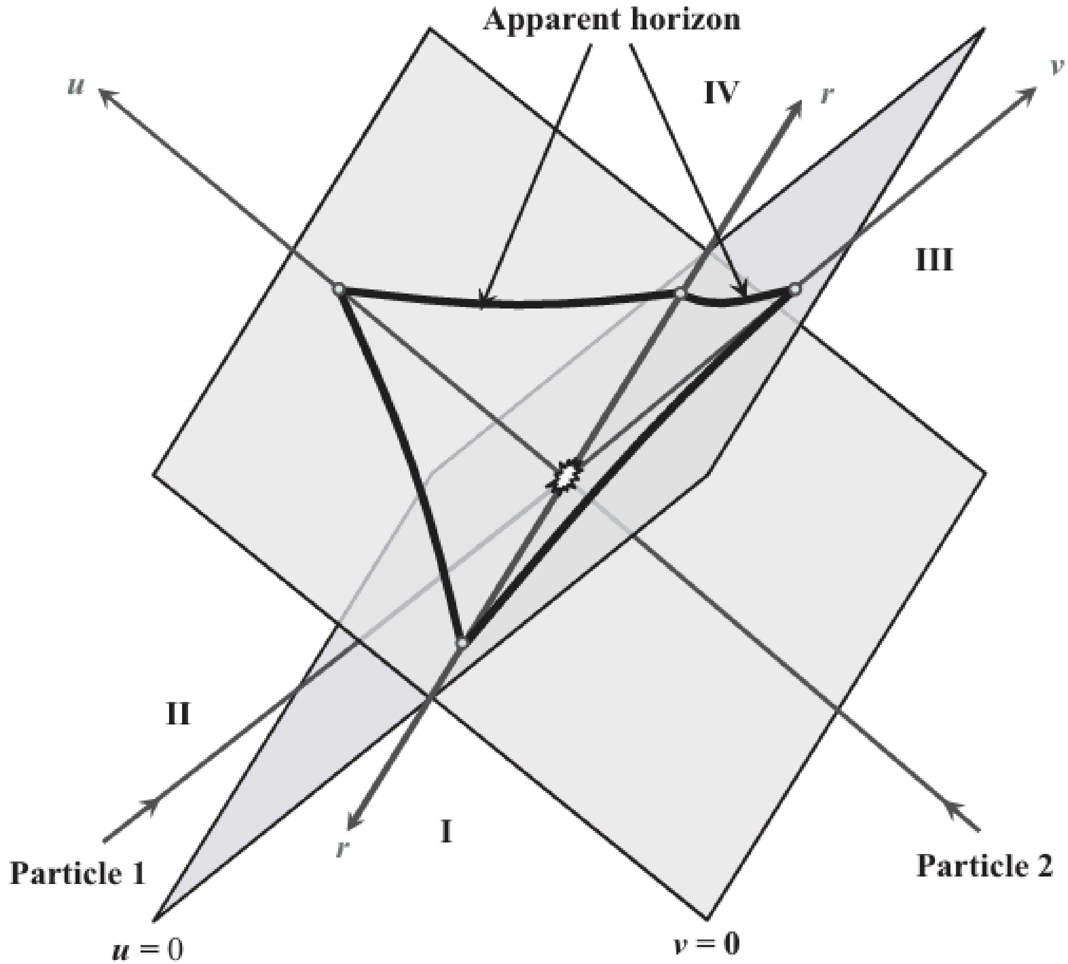
For late-time ringdown radiation the black hole perturbation theory can be applied. For the radiation of the stellar-mass black hole plunging into the massive black hole one can use the perturbation theory with the ratio of the black hole masses as a small parameter. In all other cases(late inspiral, collision, merger, and early ringdown phases) the final resort is numerical relativity. Remarkable progress was achieved in this direction recently(see, e.g., a review(Hinder 2010)andreferencestherein). Besides An accurate calculation of the amplitude of the gravitational waves from merging BH–BH,BH–NS, andNS–NS binaries.

Liquid helium is the only substance known that has the property to remain liquid at temperatures pressures down to the absolute zero temperature. Quantum liquids do not solidify even at the absolute zero temperature due to long zero-point motion of atoms. The latter property is essentially quantum. This explains their name. There are two kinds of such liquids: helium-4 and helium-3. From the chemical point of view the atoms 3He and 4He are identical since they have the same structure of the electron shells. However, the properties of 3He and 4He. Example: wave form of the gravitational radiation from two coalescent black holes.



The parameter I0 = 5.882 μA is then determined by substituting τ and L(I = 0 A,T=100 mK) cross-section of blackhole creation for collision of two ultra relativistic particles.

pμ 1 = m(γ,vγ), pμ 2 = m(γ,−vγ).



The mass of the formed black hole would be smaller than M. √ x2.

• Since gravitational radiation can propagate in the bulk. Balding phase: When a micro-black hole is formed it is very asymmetric. Moreover, in higher dimensions black objects might have non-trivial topology of the horizon (see the next section). For E m the formed black hole is a classical object, and its behavior can be described in classical gravitational theory. One can expect that all the multiples that are finally radiated during this stage. The characteristic time of this process is t ~ rS. Ultra Spinning black holes may lose their angular momentum as a result of classical instability;

Blackholes as a quantum bias channel: In the higher-dimensional gravity black hole can be used as natural probes of extra dimensions. The study of possible black hole creation in colliders stimulated high interest in higher dimensional black holes and their properties